ENGINEERING
NEWS-RECORD

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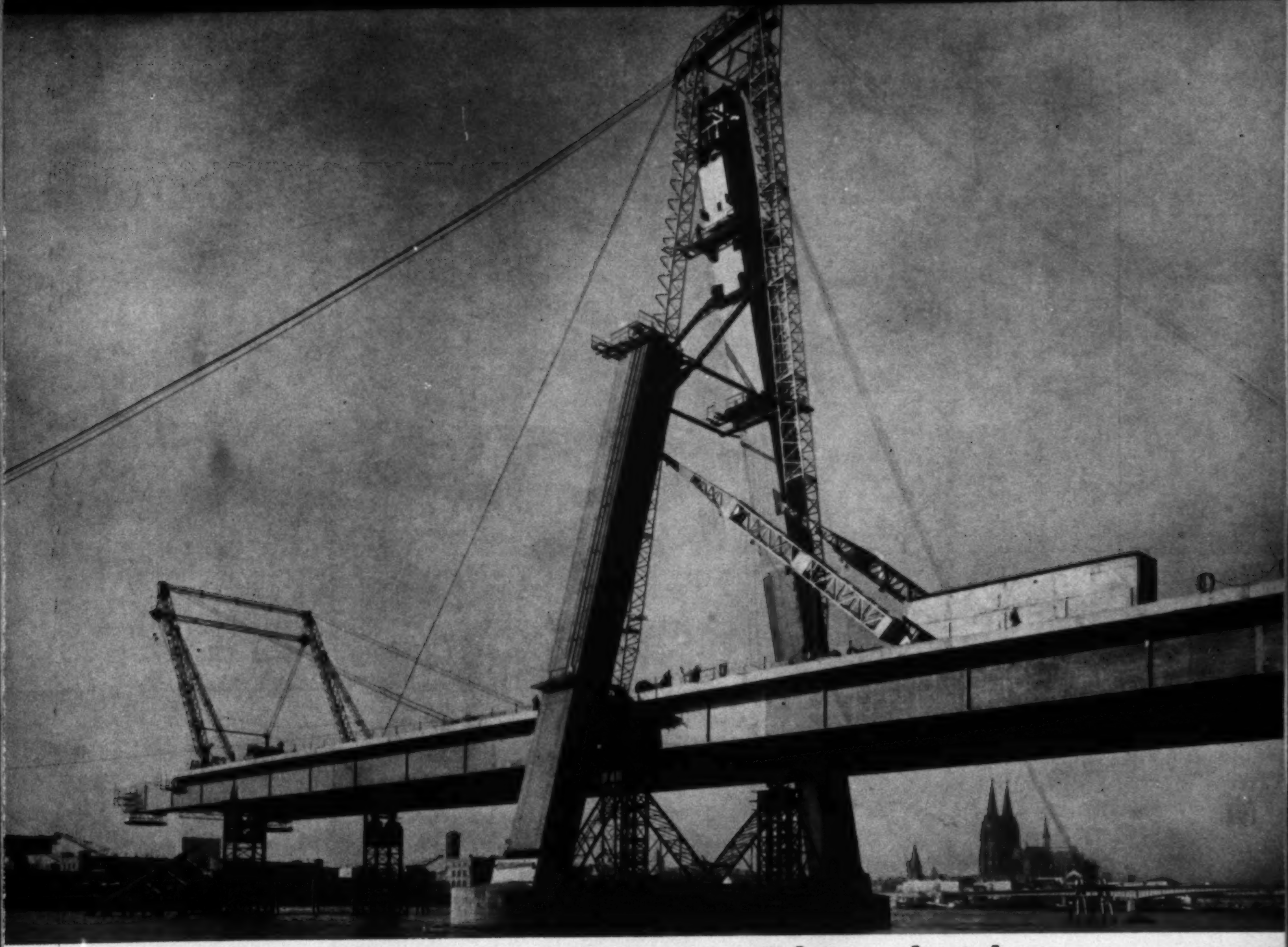

A-shaped tower supports Rhine bridge p.34

STEVENS RICE GS
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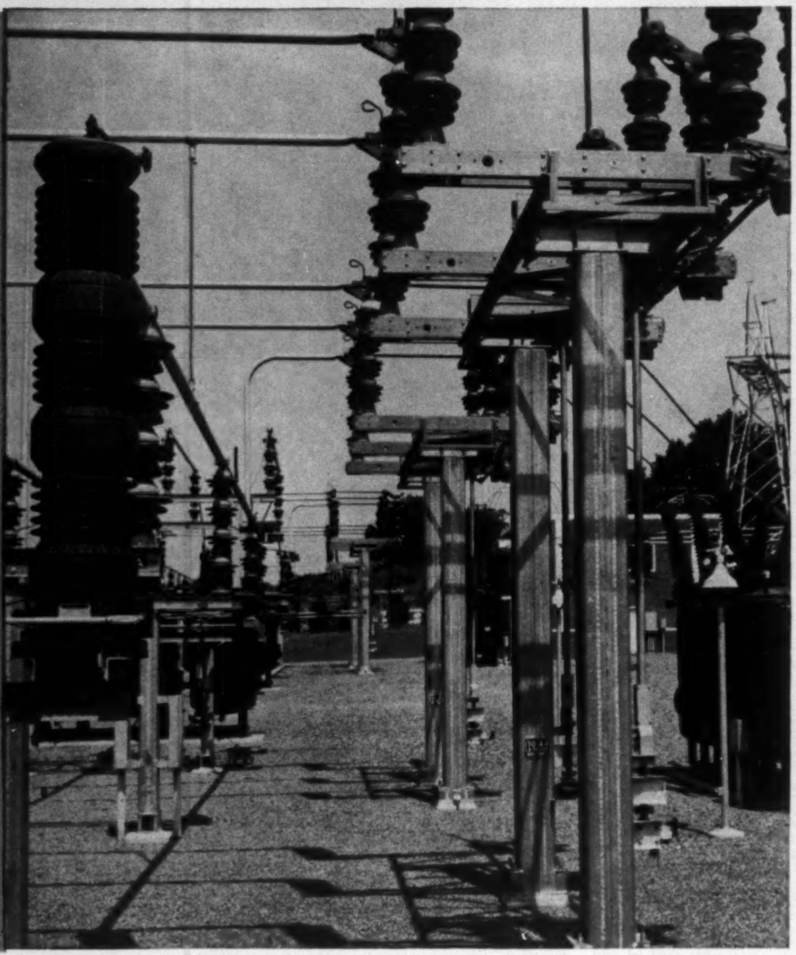
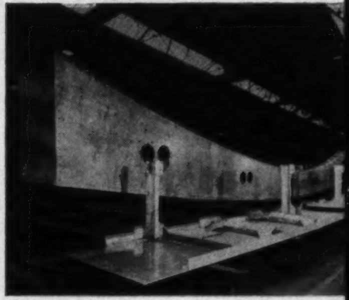
796' aluminum parapet for Fort Pitt Bridge, Pittsburgh, Pa.

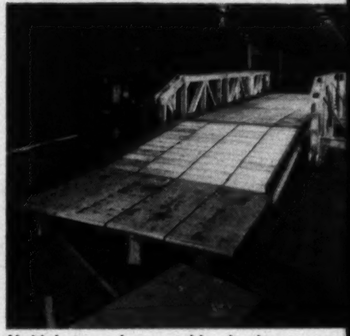


188 structures for various electric substations, totalling 141,000 lbs of aluminum.

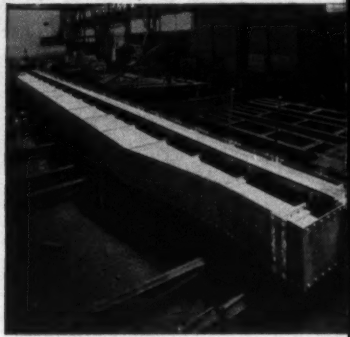
Aluminum traffic lane markers, Walt Whitman Bridge, Phila.



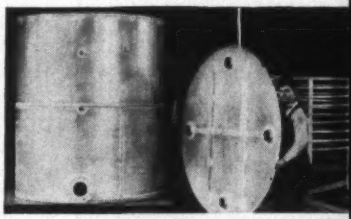
Shop fabrication of aluminum traffic lane markers.



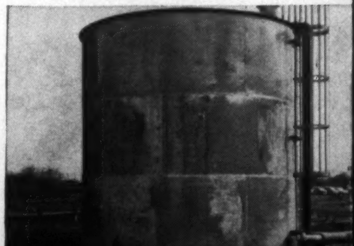
Multiple-truss demountable aluminum bridge for military use.



86'6" aluminum girder for emergency dam. 22,000 lbs.



Aluminum tank and coil fabrication.



Aluminum flat bottom storage tank, capacity 40,000 gals.

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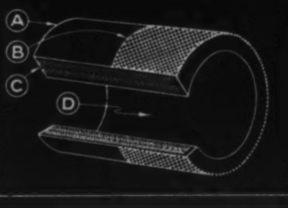

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8

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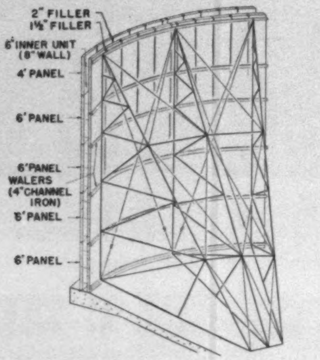
28′ Circular Walls Ganged for Sewage Plant

Friebel & Hartman, Shelby, Ohio contractor, with the use of a crane was able to strip and reset 2,300 square feet of forms on inside gang section in 3½ hours. And 8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on outside plus pouring the concrete. The project was the Mansfield, Ohio Sewage Treatment Plant, which consisted of four digestors.



Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time, and a pour every four working days. Weight of each ganged form was about four tons. A ¾ yard Lorain with an 80′ boom handled the sections.

Complete story on the Ohio Sewage Treatment Plant will be sent FREE upon request. Symons Forms may be rented with purchase option.

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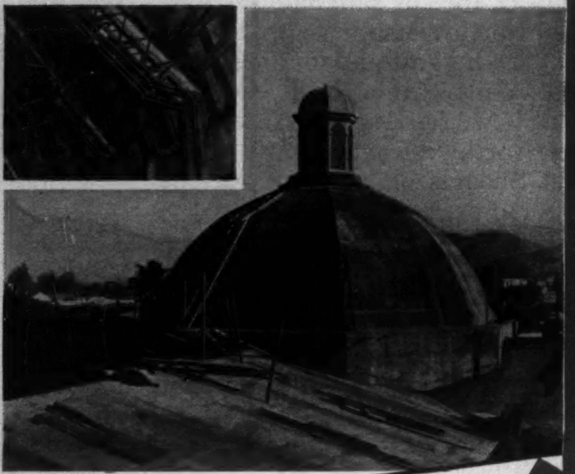

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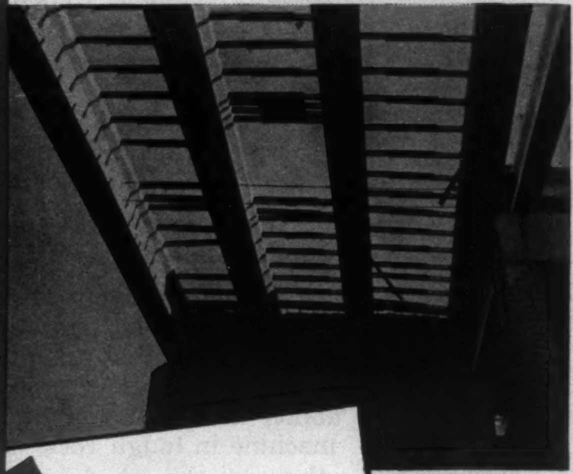

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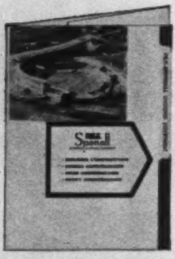

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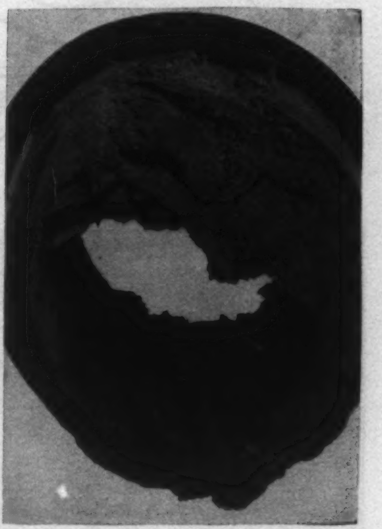

*This is an actual photograph of a substitute pipe failure.*

Because of this super-smooth interior surface a lower Kutters "n" value can be used in design.

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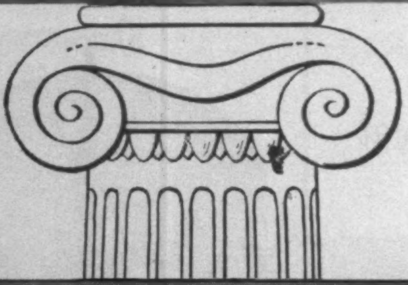

HERE are on-the-job stories of three United States Rubber Conveyor Belts, taken from "U.S." belt records in the rock products industry.

These belts are just some of the "U.S." standouts which demonstrate, year after year, why "U.S." is the world's largest producer of conveyor belts.

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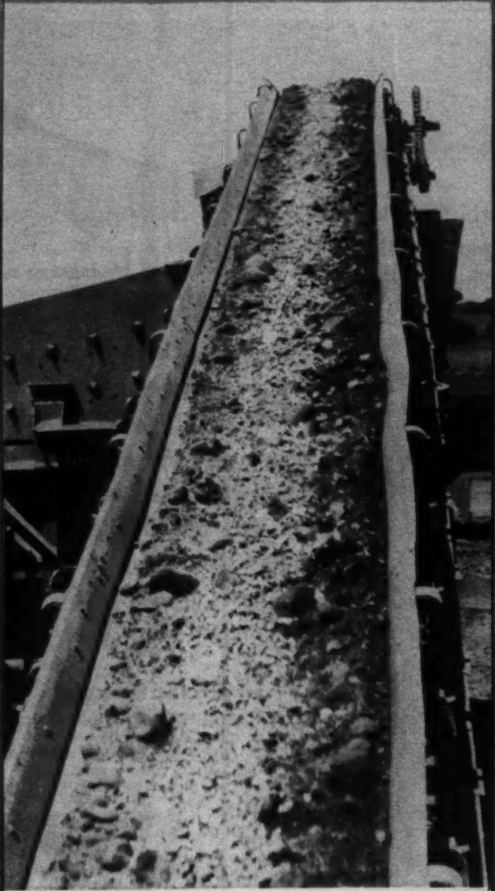

**"Only 'U.S.' Belts hold up in handling crushed rock"**

"We use hundreds of feet of 'U.S. Belting'," says G. H. Lindekugel, Jr. of G. H. Lindekugel & Sons, Mitchell, So. Dakota, "in highway construction and pit deposits. We average 600 tons per hour at our crushing plant. 'U.S.' Belts work 12 hours a day, 6 days a week, carrying rock and gravel. Couldn't find any other belts that could handle our crushed rock for any length of time. 'U.S.' belts have been three years on the job, are in good condition."

**Lehigh Portland's Union Bridge plant**
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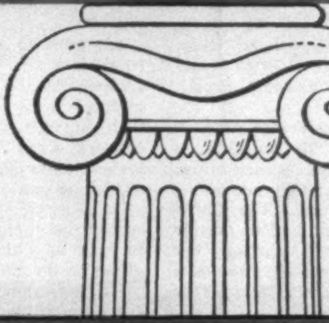
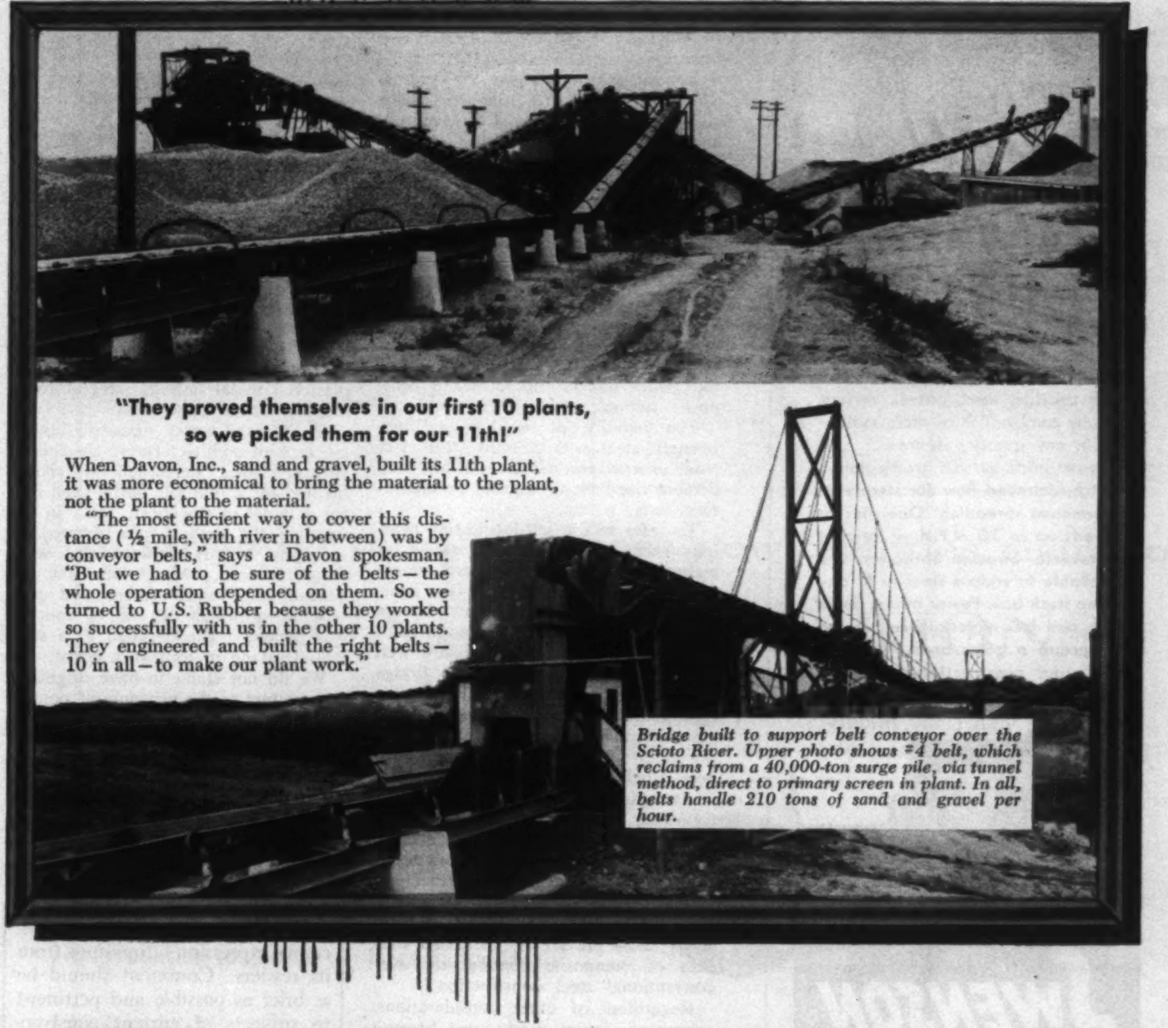
The entire system is so trouble-free that one operator (plus an oiler-helper) controls a series of 10 of the "U.S." Belts from console board at quarry.

Massive as this Lehigh plant is, provision for expansion has been designed into the conveyor systems; the superior troughing and stamina of "U.S." Belts will handle greater loads when capacity is increased.

# FAME





**"They proved themselves in our first 10 plants, so we picked them for our 11th!"**

When Davon, Inc., sand and gravel, built its 11th plant, it was more economical to bring the material to the plant, not the plant to the material.

"The most efficient way to cover this distance (½ mile, with river in between) was by conveyor belts," says a Davon spokesman. "But we had to be sure of the belts—the whole operation depended on them. So we turned to U.S. Rubber because they worked so successfully with us in the other 10 plants. They engineered and built the right belts—10 in all—to make our plant work."

*Bridge built to support belt conveyor over the Scioto River. Upper photo shows #4 belt, which reclaims from a 40,000-ton surge pile, via tunnel method, direct to primary screen in plant. In all, belts handle 210 tons of sand and gravel per hour.*

Mechanical Goods Division

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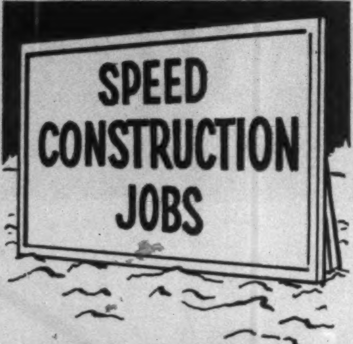

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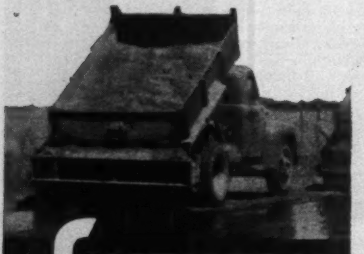

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## Reader Comment

# No Mystery in Beam Design

SIR—In the letter "Long Composite Beams?" (ENR Dec. 17, 1959, p. 9) a statement is made that the award-winning design in the American Bridge Competition surpasses existing composite spans and uses isolated girders. This is not true.

The Potomac River Bridge between Keyser, W. Va., and McCool, Md., is a 792-ft continuous deck-girder bridge of composite contsruction, containing 180-ft and 160-ft spans. The Cattaraugus Creek Bridge on the Erie portion of the New York State Thruway has all-welded steel girders of composite construction and contains five 132-ft simple spans.

The girders of the winning design should not be considered isolated, since they are connected at 20-ft intervals with composite transverse floorbeams, which, in turn, are connected with composite stringers. The slab is securely anchored to the steel framing over the entire span, providing positive, lateral top-chord bracing, lateral load distribution and unit action.

The maximum dead-load compressive stress in the concrete slab, when temporary supports for the girders are omitted, is only 270 psi with composite action. So creep should not be a problem. Use of spiral shear connectors, with welds provided to resist total horizontal shear at the top of the girder flange, should insure composite action.

The validity of welding a high-strength steel with a mild steel electrode to structural carbon steel has been demonstrated in service and by laboratory tests.

To refer to the self-lubricating bearings used in the winning design as elaborate is absurd. They are merely a refinement of sliding plate type bearings. The self-lubricating plates have a curved surface for deflection adjustment and are designed for a pressure well within the allowable for cast bridge bronze. The long-time record of this type of bearing for permitting positive, efficient movement far exceeds that of the roller-type bearings that might have been used.

As regards rigidity and deflection, the following is submitted from "Alpha Composite Construction Engineering Handbook," backed by numerous tests: "Field measurements of deflection, which substantiate theoretical values, as well as vibration studies, conclusively show the greatly increased stiffness of composite construction over conventional steel construction."

Regardless of other considerations, composite design merits use because of this stiffness alone. This is particulary significant where live-load deflections must be severely limited; for example, for structures carrying columns of elevated railways, or for long-span continuous structures where live-load vibrations may be a serious problem.

In reply to the statement, in the letter that "the complexity is further compounded by the curvature of the girders," note that a bridge with just such curved girders now spans the Niagara River above the Falls. The longest plate girder span in the U.S. (450-ft span), it has counterweighted end spans.

With continuity or fixity, it is hard to come up with anything but a curved girder to do the job efficiently.

To state that the problem is "'very complicated and should be regarded impractical" seems to be putting the cloak of mystery on an application of engineering principles that has long been recognized, though perhaps not used in exactly the same manner as in the proposed design.

ALLAN M. BEESING
*James J. MacDonald, Consulting Engineer*
*Buffalo, N. Y.*

## The Precedent?

SIR—The article, "First Concrete Canopy, Then Station," (ENR Oct. 8, 1959, p. 42) on a concrete canopy for a service station was of particular interest to me because of the method of using plastered metal lath as integral forming for the concrete shell.

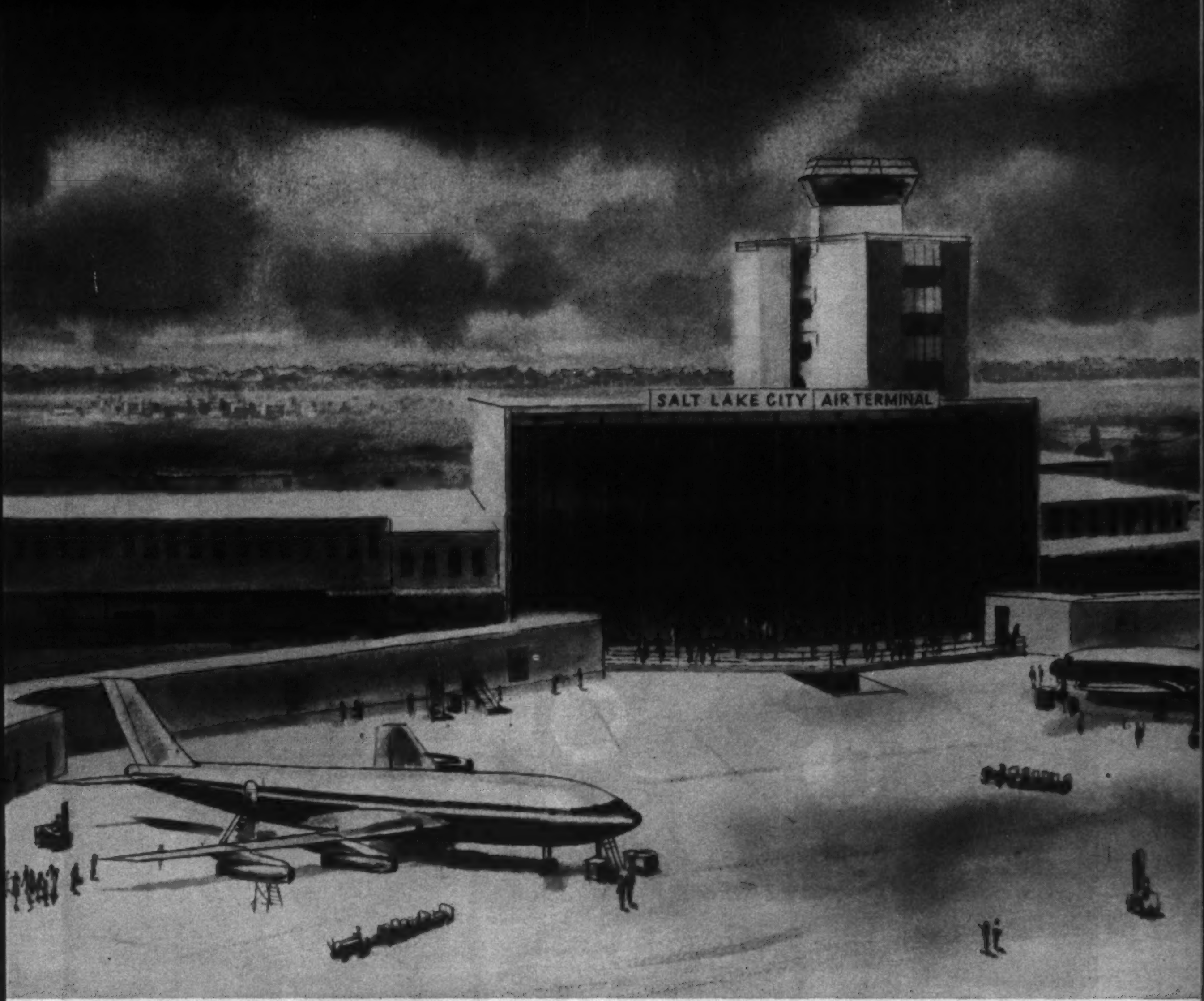
In 1954 the writer, associated as engineer with architect David Graeber of Austin, Tex., developed a similar method for a multiple barrel shell roof for a motel in Rockport, Tex. In this instance the arches were formed by springing 4 bars between tied wide-flange sections. Metal lath was tied beneath the reinforcement and plastered, over which 2½ in. of concrete was poured. This resulted in a substantial saving in formwork costs.

We do not claim to have originated this method as the principle of pouring concrete onto metal lath is not new. However, we still have no knowledge that this system had been used previously for concrete shells.

DAVID M. HERRING
*Chicago Bridge & Iron Co., Ltd.*
*Venezuela, South America*

(*Reader Comment continued p. 12*)

**Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.**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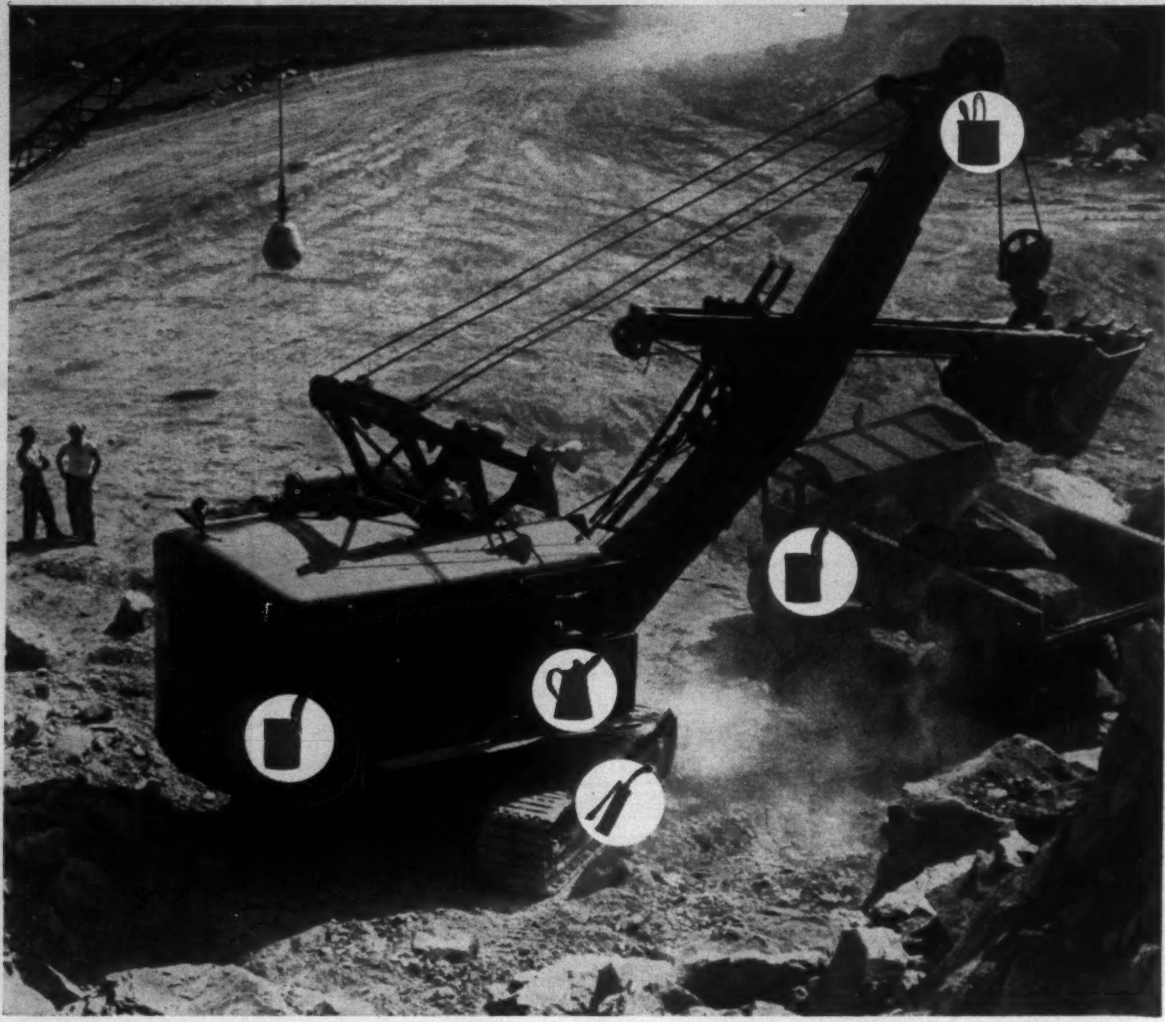

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# Can You Call a Man a "Failure" at Thirty?

## *Men who think that success is only a matter of "a few years" are failures . . . however young they are!*

How often have you heard some young man in business say, "I'll admit the job I have now isn't much but, after all, I'm only in my twenties."

Or: "Just about every executive in the company I work for is between 45 and 65. I have plenty of time to get ahead."

This *mistaken* idea that success comes automatically with time is easy to understand. Promotions do come regularly and effortlessly to young men of promise. *But* the day arrives, often abruptly, when that promise must be *fulfilled*. Native ability and intelligence can carry a man only to the mid-way point in business—beyond that he must *prove* his capacity to justify a position of executive responsibility. That calls for a practical, working knowledge of business fundamentals.

The time to build that knowledge—to lay a solid groundwork for your future progress—is now . . . *now* while time is still on your side. If you fail to recognize that fact, you'll know only struggling, skimping and regret when your earning power should be at its height.

## FOR THE BUSINESS MAN WHO REFUSES TO STAGNATE

forging ahead in business
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## For Mass Transportation

SIR—We should go along with Mr. F. E. Downs (ENR Dec. 17, 1959, p. 32) where he favors mass transportation. While individual transportation may be desirable, and even necessary, in the suburbs, it is utterly anti-urban in the concept that it can function efficiently in the city—essentially a Mass-Abode. It can no more function so than if the inhabitants of an apartment house were each permitted to bring in individually their own utilities.

On the other hand it is utterly unimaginative and impractical on the part of Mr. Downs to suggest—"wipe out the Federal Bureau of Roads," "stop all Federal Intervention," "let the states sink or swim," etc. What we really need to bring about mass transport is more coordinated planning, not less.

Before making drastic recommendations, we obviously need a thorough understanding of the relative functions both of individual and mass transport. While the individual driver needs a car to get to the shopping center, or to take the children to school in the suburbs, the transport of people going to, or coming from, the city, or the plant, at the same time, can only mean mass transport—and nothing else.

But in order to achieve such transport over appreciable distances, the cooperation of the municipality, the county, the state, the federal government is absolutely essential both for the mass-rider and the individual driver.

We cannot draw the line at state and city boundaries. All federal, state and municipal roads in a region must be planned on an integrated basis.

L. TARNOPOLL
*Tarnopoll and Associates*
*New York, N. Y.*

## For Your Calendar . . .

**National Association of County Officials,** El Cortez Hotel, San Diego, Calif., Feb. 14-16. Write: Bernard F. Hillenbrand, 1001 Connecticut Ave., N.W., Washington, D. C.

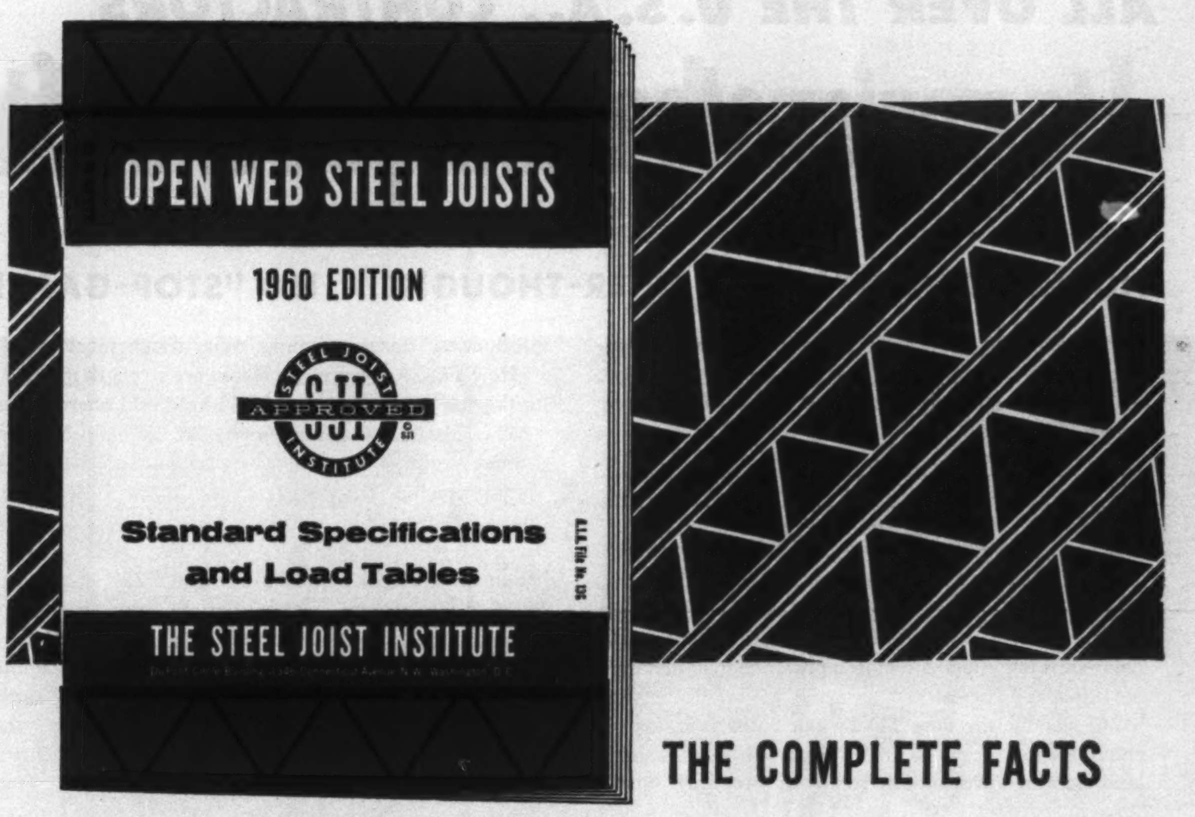
**National Sand & Gravel Association,** annual meeting, Conrad Hilton Hotel, Chicago, Ill., Feb. 15-19. Write: NSGA, 527 Munsey Bldg., Washington 4, D. C.

**National Society of Professional Engineers,** winter meeting, Broadview Hotel, Wichita, Kan., Feb. 18-20. Write: Paul Robbins, NSPE, 2029 K Street, N. W., Washington 6, D. C.

**Mason Contractors Association,** annual convention, Netherlands-Hilton Hotel, Cincinnati, Ohio. Feb. 21-24. Write: Mason Contractors Association of America, 208 S. La Salle St., Chicago 4, Ill.

**U. S. Chamber of Commerce,** construction industry conference, U. S. Chamber of Commerce Headquarters, Washington, D. C. Mar. 10-11. Write: U. C. Chamber of Commerce, 1615 H St., NW., Washington, D. C.

**American Concrete Institute,** annual convention, Commodore Hotel, New York City. Mar. 14-17. Write: American Concrete Institute, P. O. Box 4754, Redford Station, Detroit 19, Mich.



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Standard Specifications and Load Tables

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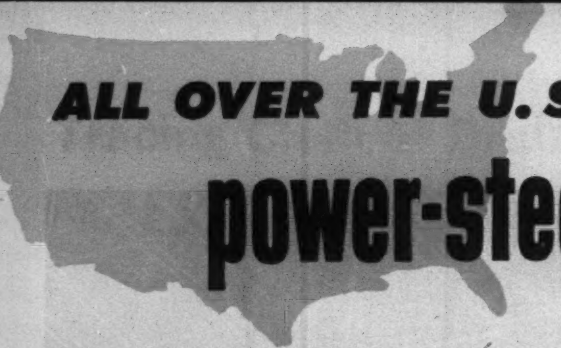

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# power-steer and power-shift

## NO ATTACHMENT! NO AFTER-THOUGHT! NO "STOP-GAP"!

Exclusive, years'-proven combined Planet Power-steering and Hi-Lo power-shifting are designed-in, built-in, basic standard equipment of the new 230-hp International TD-25!

Simplified TD-25 design is the only planetary system engineered and located to give you the dual advantages of "live track" steering and on-the-go shifting!

"Live track" Planet Power-steering eliminates load-limiting "dead-track drag"—gives power to pull full loads on turns, as well as on straight-aways. On-the-go, Hi-Lo power-shifting does away with time-wasting "gear-shift lag"—lets you match power to load instantly for full-speed cycles!

No wonder the new TD-25 can outearn king-sized clutch-steered crawlers up to 50%—on push-loading; land-clearing; overburden removal; benching; "mass-production" dozing; ripping; other tough jobs!

New TD-25 seven-roller tracks are strength matched to the full effort of the new 230-hp diesel engine. The "25" is platformed on super-rugged double-box beam frames — and is smoothly carried on International's dual-protected Dura-Rollers, the track rollers that make 1,000-hr lube intervals practical!

**Power-shift and power-steer the "25"** with king-sized loads—around curves, upgrade, anywhere. Compare the advantages of getting this exclusive performance, and getting it from years'-proven standard equipment. Prove what's behind the "25's" rapid rise to nationwide contractor acceptance. Let your International Construction Equipment Distributor demonstrate!

◀ **Though "out-rated" 105-hp** by a king-sized, clutch-steered competitor, this nimble TD-25 proves able to outwork "the big one"—side-casting and benching to build Pacific Northwest mountain logging roads!

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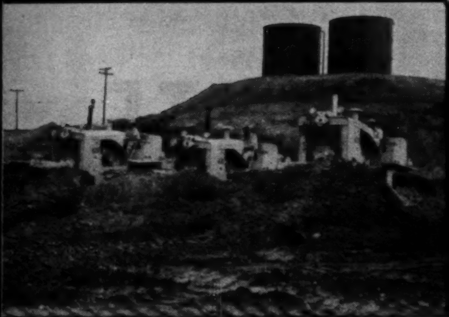
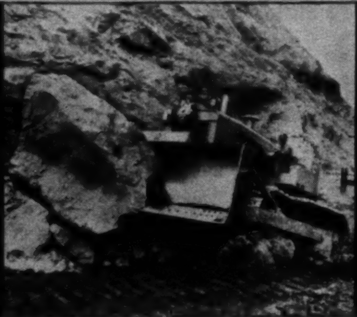
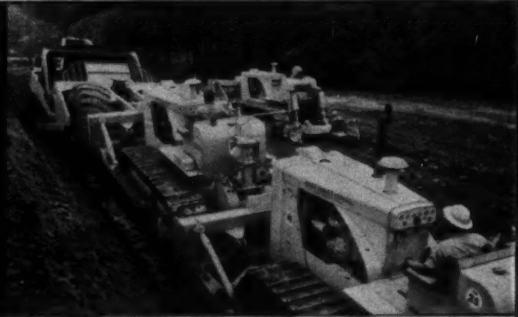


**Three new International TD-25's** of contractor V. E. Posey's fleet team up to prepare homesites from a mountainside—near San Diego, California. Dual-valving of the "25's" direct-start DT-817 engine provides for peak turbocharging efficiency—to deliver full-rated performance, from sea level to timberline!

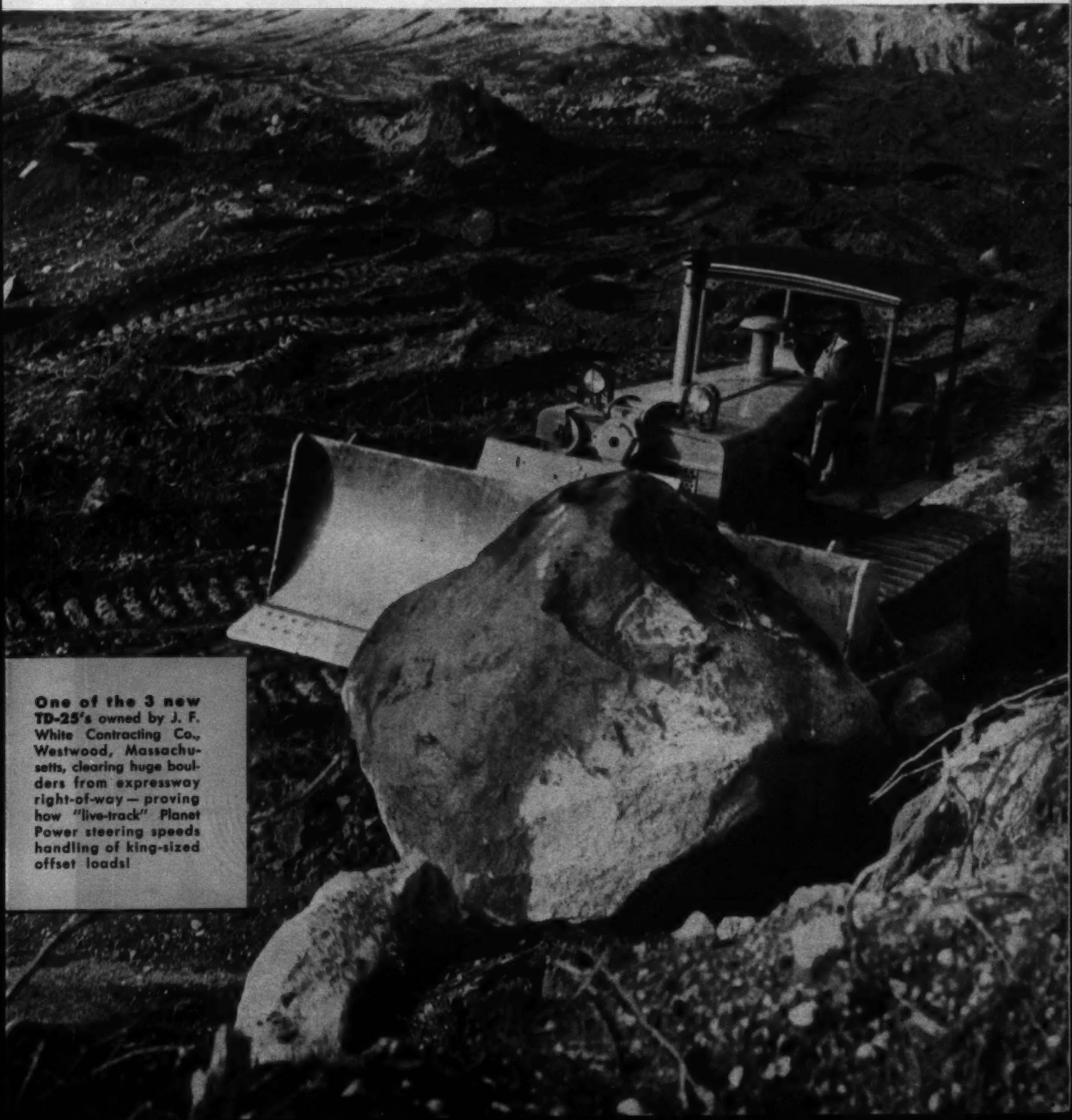


**Cleaning the face** of a Missouri strip mine behind a big dragline, this TD-25 pushes "tractor-sized" boulders aside with the greatest of ease. This "25" also builds dragline walkways and haul roads—and drastically cuts land-clearing costs for Peabody Coal Co.



**For cycle-speeding push-loading,** TD-25 power-shifting helps give "feather-touch" contact; maintains solid push-block contact on curves; gives gear-higher kick-outs than ordinary. The two "25's" tandem pushing the International 295 Payscraper®, and the third one ripping, belong to superhighway contractor Ed Bentley, Sylacauga, Alabama.

# with TD-25 standard equipment!



**One of the 3 new TD-25's** owned by J. F. White Contracting Co., Westwood, Massachusetts, clearing huge boulders from expressway right-of-way — proving how "live-track" Planet Power steering speeds handling of king-sized offset loads!

# JENKINS O.S.&Y. U-BOLT GATE

## MADE BETTER THAN NEED BE . . .

## Costs Less to Use

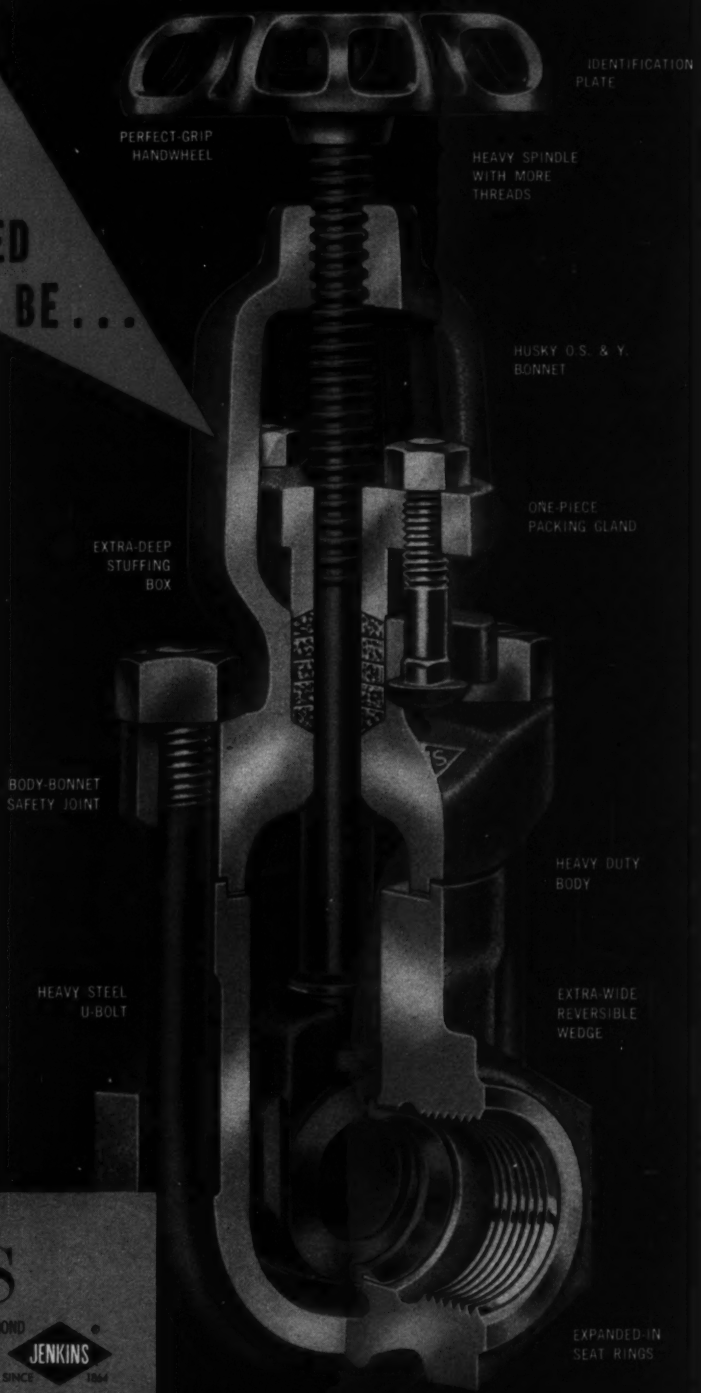
YOU PAY NO MORE for the extra quality you see in every part of a Jenkins Outside Screw & Yoke U-Bolt Gate valve. Yet longer life and reduced maintenance is bound to result from the extra ruggedness, the precision manufacture and unique design features which Jenkins puts into these popular, general utility valves.

Choose the Outside Screw & Yoke pattern for services where spindle threads must be kept out of the destructive effects of fluids in the line; where spindle threads must be cleaned and lubricated regularly or where a rising spindle is needed to indicate wedge position.

Choose JENKINS, whether O.S. & Y. or Inside Screw pattern, for valves built to save maintenance dollars.

**WIDE RANGE OF JENKINS U-BOLT GATES**

GET FOLDER NO. 207 which describes Inside Screw and O.S. & Y. patterns . . . Iron Body with Bronze or Stainless Steel Mounting . . . All-Iron and Ni-Resist with type 316 Stainless Steel trim. Ask your local Jenkins Distributor or write Jenkins Bros., 100 Park Avenue, New York 17.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HEAVY DUTY BODY
HEAVY STEEL U-BOLT
EXTRA-WIDE REVERSIBLE WEDGE
EXPANDED-IN SEAT RINGS

Fig. 242
Iron Body, Bronze Mounted

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**VALVES**
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# ENGINEERING NEWS-RECORD

Vol. 164, No. 5 February 4, 1960

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# THE CONSTRUCTION WEEK

**HARD HAT IN THE RING**—Perhaps buoyed by his recent election as president of Associated General Contractors of America, Boston contractor John A. Volpe is seeking the Republican nomination for Governor of Massachusetts. Mr. Volpe has served the state as public works commissioner and the federal government as interim highway administrator. In the latter job he helped set up the Interstate Highway Program.

**SELECT IT, THEN LEASE IT**—Hertz Corp.'s newly formed equipment leasing company plans to let a customer select whatever construction equipment he needs from a supplier of his choice at a price agreed on by him and the supplier. Hertz then will buy it and bill the customer monthly, quarterly or annually, depending on lease agreement terms.

**ANOTHER DAM DELAY**—Last week's scheduled bid opening on three hydraulic turbines for Flaming Gorge Dam, Utah, has been postponed "until further notice." A new date will be set when "Buy American" technicalities involving turbines for Glen Canyon Dam are settled. English Electric Export and Trading Co., lowest bidder on Glen Canyon equipment is questioning foreign production part of next low bid by Baldwin-Lima-Hamilton Corp. A 6% differential added to the foreign bid under Buy American would put B-L-H in low place (ENR Jan. 14, p. 108).

**POLLUTION WARDENS**—Quicker action is needed to head off water supply hazards from accidental industrial pollution of Ohio River Valley streams, says the Ohio River Valley Water Sanitation Commission. The commission wants at least one responsible employee designated at each plant to rush information to the commission when pollutants are accidentally released.

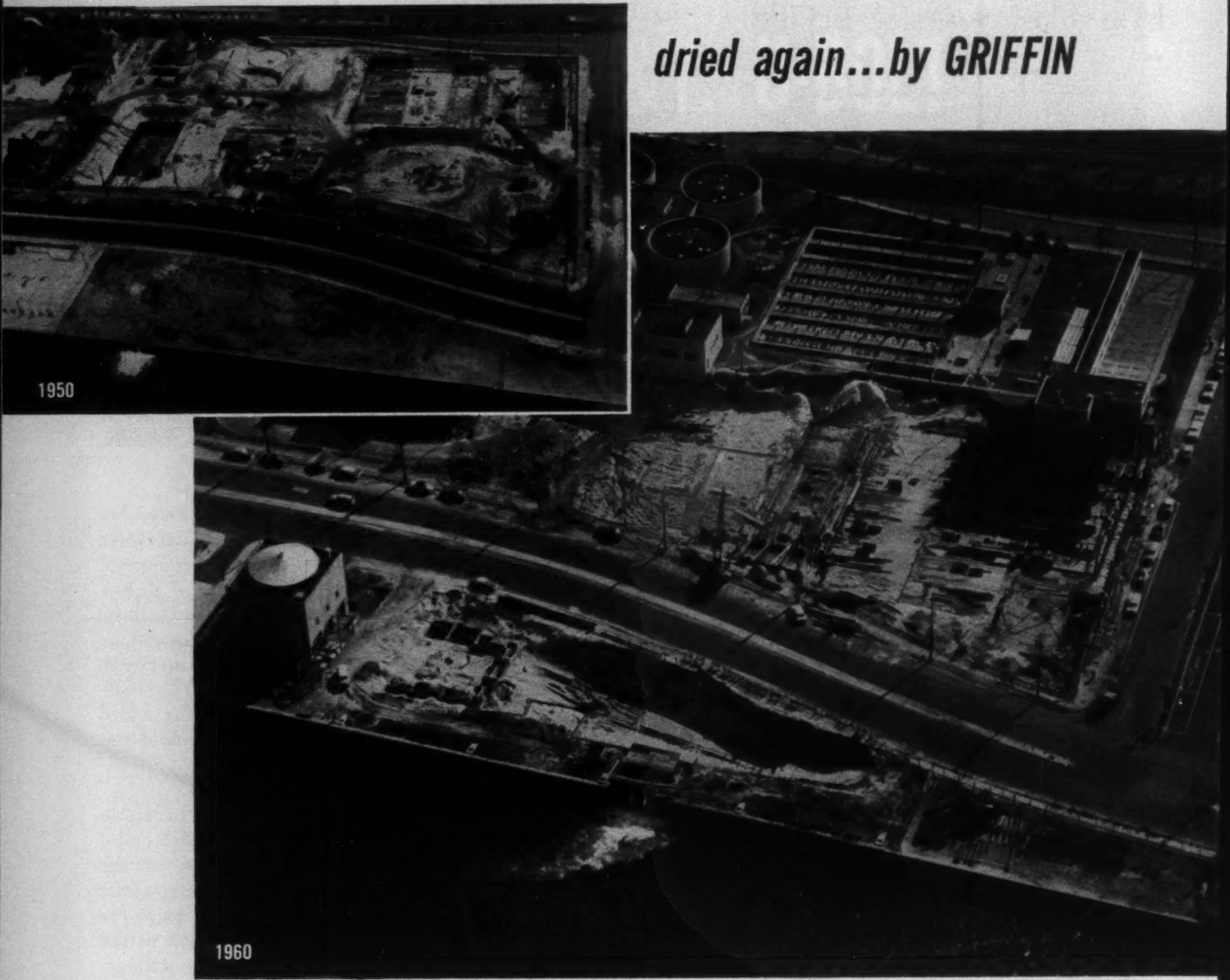
**BIG TERMINAL TO GET BIGGER**—A $20.2-million construction program to expand capacity of the midtown New York Port Authority bus terminal, already the world's largest, will begin in March. On completion, in late 1962, capacity will have increased 50%.

**DENVER EASES UP ON WATER**—With twice the present supply of water in view from expansions planned and under way, Denver has lifted a nine-year-old limit for water-line extensions. It's good news for homebuilders with sites and customers—but no water—outside the limits.

**WHAT'S HIS LINE?**—TV's John Daly, panel moderator and network vice-president, has been named a member of the Surgeon General's Water Pollution Control Advisory Board. Appointed by the President, the versatile Mr. Daly attended his first board meeting in Washington last month.

## *dried then...*

## *dried again...by GRIFFIN*



*1950 Project:* Sewage Treatment Plant, Rockaway, N. Y. *General Contractor:* Merritt-Chapman & Scott Corporation
*1960 Project:* Addition to Sewage Treatment Plant, Rockaway, N. Y. *General Contractor:* D. Fortunato, Incorporated

# UNBRACED COFFERDAM MAINTAINED 30′ BELOW BAY... WELLPOINTS INSTALLED UNDER STRUCTURES AND STREET

Unusual features marked both predrainage operations at this large wet site. On the first job, the dewatering scheme permitted construction of a cofferdam 30 ft below Jamaica Bay – without cross-bracing.

On the "encore" performance, Griffin engineers designed the procedure to tunnel header line under structures, thus eliminating costly interruptions in plant operations. Wellpoints were also installed under the street, to work throughout the entire pumping operation without "tuning."

All problems were solved on both jobs as Griffin wellpoint systems continuously pumped 4 to 6 million gals per day.

Try Griffin service on one of *your* wet jobs—you'll want it for all of them.

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25th YEAR

# WASHINGTON OBSERVER

- **Contractors support T-H change**
- **Lump-sum requests on water job?**

- **A plan of action for AFL-CIO craft unions and some contractors on Taft-Hartley legislation has been worked out.** It was offered this week at the Building Trades Department meeting in Miami Beach. The plan, which has been kept under wraps, was reached in management-union conferences conducted by Harvard professor John Dunlop, head of the industry-labor committee to promote the construction industry.

**The plan would send AFL-CIO unions and some contractors to Capitol Hill in joint support of the union's drive** to lift Taft-Hartley's secondary boycott ban against picketing of construction sites. The amendment has been backed by the Administration and leaders of both houses of Congress. It is scheduled to come up early in the session.

**Opposition to the amendment comes from parts of the construction industry** as well as from the Chamber of Commerce, the National Association of Manufacturers and the National Association of Home Builders. Officials of Associated General Contractors say privately they are against testifying in favor of the building trades amendment. But the contractors are split on the issue.

**Insiders know that many contractors—general and specialty—aren't against giving the building trades what they want.** They think that supporting the amendment would pay off in better relations with the labor officials they have to get along with.

**Fate of the amendment is doubtful now** but if a sizable bloc of contractors agrees to support the measure, it has a good chance of passing this session.

---

- **Consideration is being given to a change in the method of appropriation for rivers and harbors, flood control and reclamation projects.**

These projects come back in the annual budget each year with a request to Congress to appropriate sufficient money to meet the expenses of another year's work.

**All other federal projects are financed in full by a single-shot, lump-sum appropriation** at the start of construction, when Congress approves the building of the project.

Opponents say lump-sum appropriations would wipe out or weaken the close yearly review that they think good.

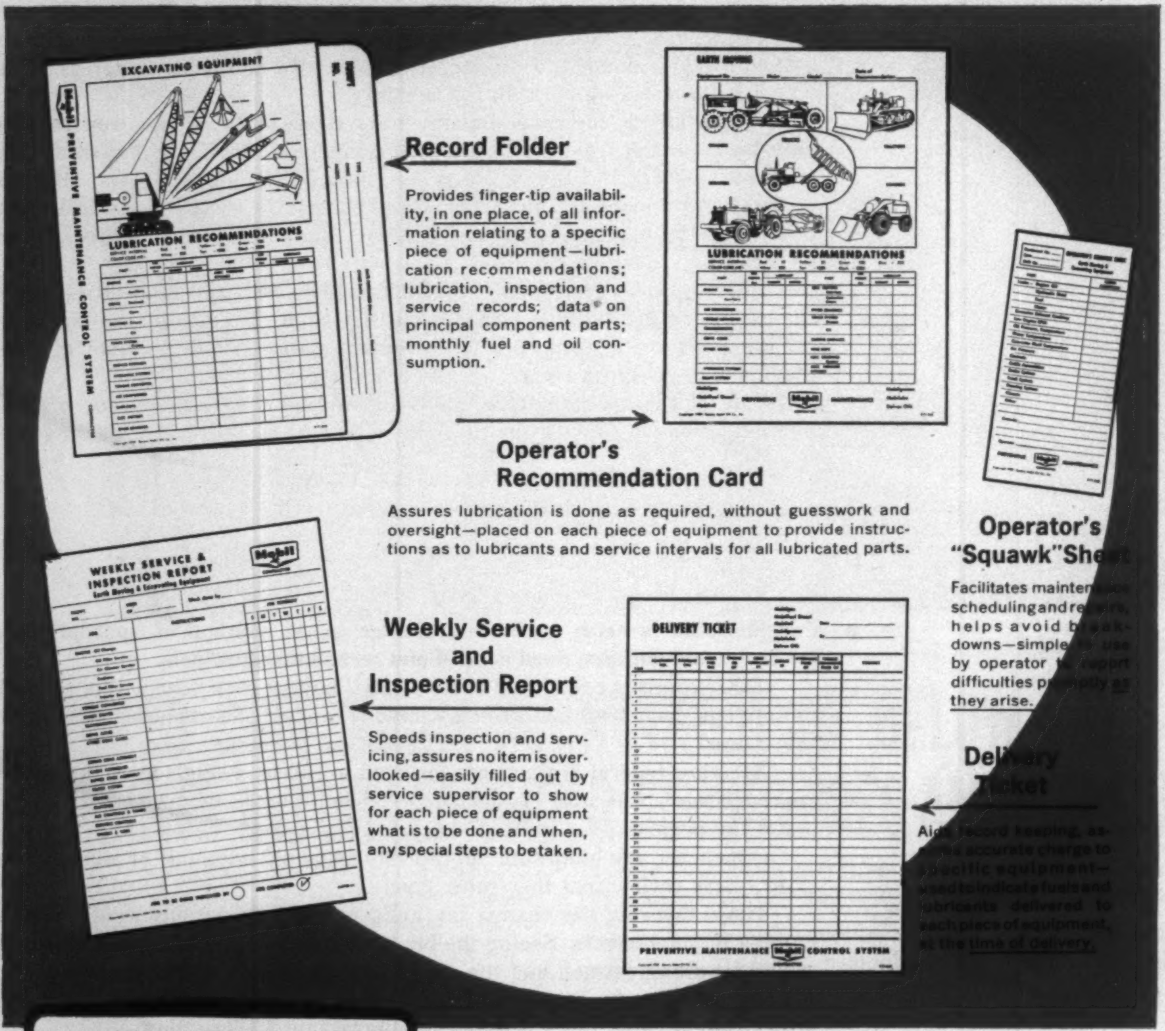
Those favoring the change say lump-sum appropriations would have a number of good effects. Seeing the big figures in an appropriation bill would show both Congressmen and the public the magnitude of the proposed job. A Congressman who votes easily for $150,000 to draw contract plans for a project might think twice if asked to appropriate $500 million.

**This year the White House considered asking the full amounts for the new projects it recommended**—some $500 million or so in all. Instead it went along with the old idea, asking only some $36 million for first-year work.

But next year, as a parting gesture, Mr. Eisenhower may ask the full sum for projects he recommends.

# PUT THE
# MOBIL PM SYSTEM
# TO WORK FOR YOU!

Contractors all over the country are saving money, eliminating downtime and keeping equipment on the job with Mobil's simplified five-piece PM System. This successfully tested system includes every form you need to make Preventive Maintenance *work*, to assure that record keeping is *easy and informative.* Maintenance men like to work with it. It organizes their maintenance procedures, saves time and money. Your maintenance men and your operators can make this system work for you too. Call or write to have a Mobil representative show you how Mobil's PM System can save big money for you.



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PREVENTIVE MAINTENANCE CONTROL SYSTEM
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## Record Folder

Provides finger-tip availability, in one place, of all information relating to a specific piece of equipment—lubrication recommendations; lubrication, inspection and service records; data on principal component parts; monthly fuel and oil consumption.

## Operator's Recommendation Card

Assures lubrication is done as required, without guesswork and oversight—placed on each piece of equipment to provide instructions as to lubricants and service intervals for all lubricated parts.

## Operator's "Squawk" Sheet

Facilitates maintenance scheduling and repairs, helps avoid breakdowns—simple to use by operator to report difficulties promptly as they arise.

## Weekly Service and Inspection Report

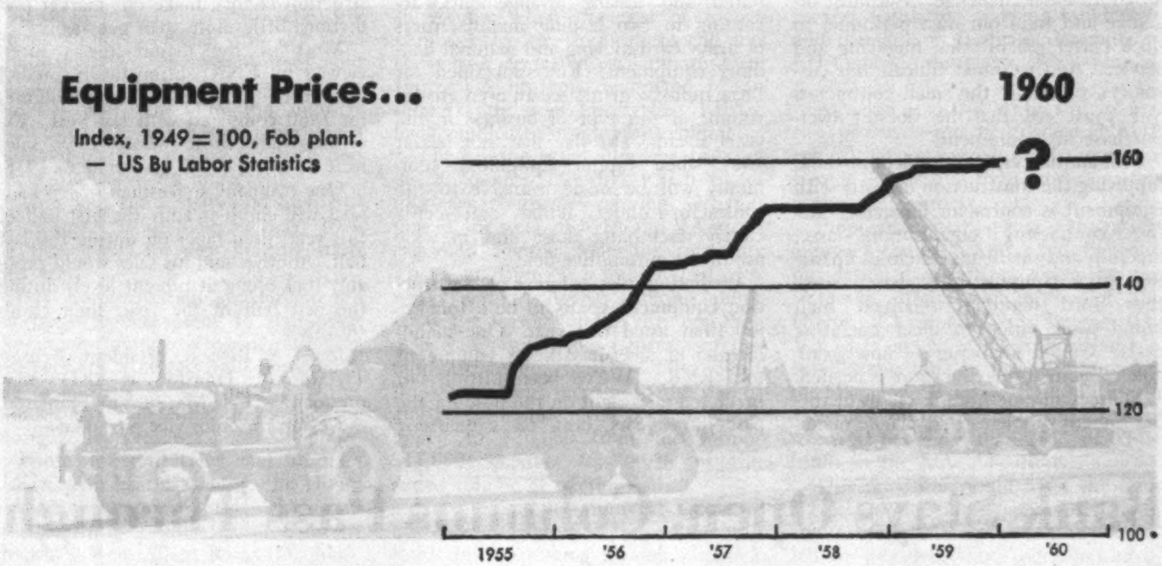
Speeds inspection and servicing, assures no item is overlooked—easily filled out by service supervisor to show for each piece of equipment what is to be done and when, any special steps to be taken.

## Delivery Ticket

Aids record keeping, assures accurate charge to specific equipment—used to indicate fuels and lubricants delivered to each piece of equipment, at the time of delivery.

**Mobil** *Correct Lubrication*

MOBIL OIL COMPANY, 150 E. 42nd St., New York 17, N. Y.



Equipment Prices...

Index, 1949=100, Fob plant. — US Bu Labor Statistics

# They'll Hold the Line . . . IF

Some manufacturers and distributors of construction machinery will increase prices in 1960, but only moderately. Others will hold the line and look for increased profits through larger sales volume.

All will employ "hard sell" methods to keep pace with competition, which, they say, is getting tougher.

That's the word from equipment men attending the 41st annual meeting of the Associated Equipment Distributors in Chicago last week.

**A majority of manufacturers queried by ENR at the meeting say they'll "hold the line" and not increase prices during 1960.** But some were quick to add that this decision could be knocked galley-west by either of two factors: steel and labor. If the cost of either goes up, it will be difficult to keep prices of some equipment models at current levels.

**Those manufacturers contemplating price increases say they'll be moderate. No one interviewed predicted more than a 5% increase.**

Price increase, per se, is not a critical marketing factor, according to a manufacturer of bituminous paving equipment. "We concentrate on increasing the productivity of machines, in which case slightly increased costs of new or improved models are more than offset by increased profit potential for the user."

One manufacturer of a broad line of portland cement concrete paving and finishing equipment sized the price situation up this way: "Our price adjustments will be on a highly selective basis, by models. We hope to actually reduce prices of some models (barring increased steel prices or wage rates) while necessary increases will be minor —less than 2% to 3%." Incidentally, this manufacturer has had no general increase in selling prices during the past 18 months.

Others who have announced price increases during the past year flatly stated they intended to make no increases in 1960.

In most cases price increases will be on a selective basis—by models, not across-the-board.

A sampling of those planning to increase prices this year reveals the following figures: Heavy construction equipment, such as shovels and cranes, 3% to 5%; trenching equipment, 3% to 4%; off-the-road dump trucks, 3% to 5%; rubber-tired cranes and shovels, 3%; concrete pavers and heavy hauling equipment, 2% to 5%;

Manufacturers who hope to hold the line against increasing prices specialize in such heavy equipment as power graders, rock crushing and screening plants, hydraulic cranes, engines for prime movers and other heavy equipment and scrapers.

**The equipment picture as seen from the distributor-manufacturer viewpoint was described by AED's retiring president, F. J. Fitzpatrick, president of Parker-Danner Co.,** who made these predictions for 1960:

- Total volume of equipment sales to highway contractors will be 5% to 10% greater than in '59.
- Distributor sales to federal, state, county and municipal agencies will be slightly better than in '59.
- Construction equipment sales to industrial concerns will increase up to 5%.
- Distributors serving mining and oil fields can expect a 10% increase in sales over last year, while sales to the logging industry will reach about the same level, or slightly better.

**Mr. Fitzpatrick had a few sharp words of warning for his fellow distributors. "It is fallacy," he said, "to depend heavily on the national highway program for increased sales of construction equipment."** One reason: those distributors reporting sales increases during 1959, in an AED survey, generally attributed them to more concentration or better penetration of markets other than highway construction.

In a resolution passed on the highway program, AED called for investigations based on sound engineering and economic considerations.

Mr. Fitzpatrick believes the used equipment situation still is critical. There is too much of it in dealers' yards; this despite 156 auction sales last year that grossed from $20 million to $25 million. On the other hand, he says, the equipment-rental business is booming. Last year rental volumes increased up to 25% in some areas. This year, another jump is likely.

"And finally," he warned, "we face an educational challenge. We must organize and train our own personnel to do a better job in sales, financing and service. And we must educate our customers, especially the small contractor. We must see that he doesn't overpurchase his equipment."

**Still another critical problem of those supplying the construction industry with equipment is contractor financing.** Active contracting organizations—large, medium and small—need help in financing major equipment purchases, since they must maintain relatively high liquid asset ratios to meet operating costs. Credit financing is now available in many forms, but more is needed.

Sources and methods of credit financing present problems that plague manufacturers, distributors, and contractors alike.

Credit problems have led directly to greatly increased volumes of equipment rental and leasing arrangements, according to two leading manufacturers of heavy earthmoving and material handling equipment. Key spokesmen for these industry giants see an even greater volume of this type of business in the years ahead. The day may not be far away when capital equipment commonly will be made available to the contractor under rental agreements closely resembling those now in wide use in the automotive field.

**Predicting sales volumes of construction equipment seems to be a tougher job than usual this year.** One manufacturer of diversified heavy equipment told ENR, "We've been hitting our predicted sales right on the nose for the past three years, even on a quarterly basis. But right now the confusion in our national highway program at the state level, plus the uncertainty of homebuilding and other nebulous construction factors, make our market predictions little more than guesswork."

Most of the manufacturers interviewed by ENR optimistically predict substantial increases in sales volumes for 1960 compared with last year. Exceptions are those whose 1959 sales were 50% to 100% greater than 1958.

One company spokesman believes his sales will climb steadily the first half of this year, then taper off during the last half. Another said his sales would probably rock along at present levels during the first half of the year, then climb steadily.

Jewel A. Benson, president, Benson Tractor Co., Houston, is AED's new president. H. J. Mayer, San Francisco, moves up to senior vice president.

# Bank Stays Open, Columns Pass Through

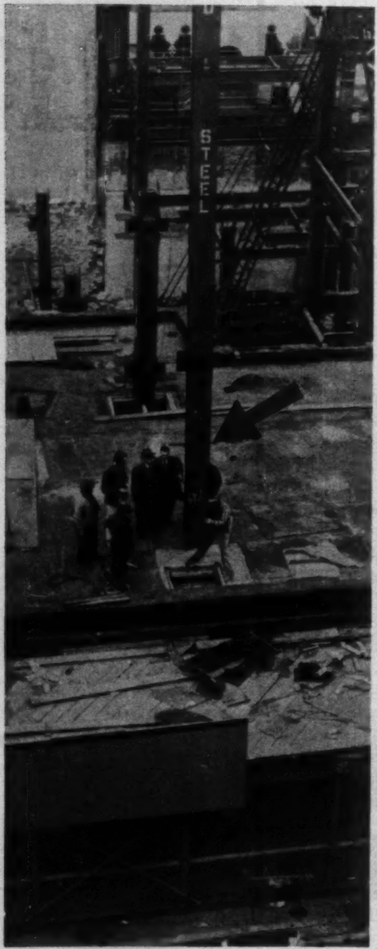
Operations in an East Side Manhattan bank continue uninterrupted while framework for an 18-story office building passes through.

Eight three-story columns pierce the existing bank building. A 110-ft boom lowers them through holes cut in the roof, ceiling, main floor and basement. At the foundation tops, steel workers bolt the column webs to clip angles welded to the base plates. Plywood shafts shield the columns and the floor openings in the building's interior.

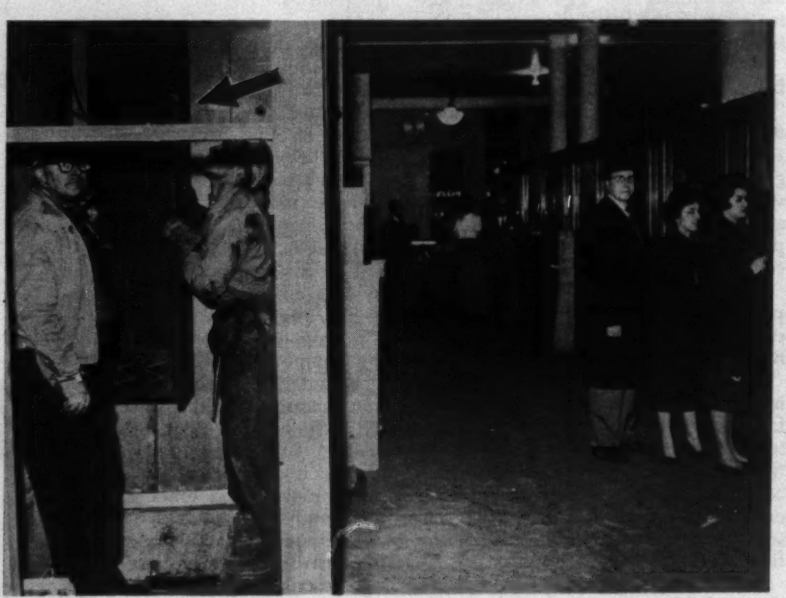
Excavating the foundation was the most difficult and costly part of the operation. The existing basement is too small to accommodate power equipment. Each pit, extending 35 ft to bedrock, had to be dug by hand. Carpenters framed the pit walls with timber sheathing, which stayed in place as forms for concrete piers.

Cost estimate for the new office building is $6 million. Chemical Bank New York Trust Co. is tenant.

Jarcho-Landau Corp. is owner-builder; Schuman and Lichenstein is architect; Charles Mayer, consulting engineer, is structural engineer. All are from New York City.



**Lowered through roof . . .**



**Column pierces floors as patrons bank.**

# $1-Billion Federal Mortgage Prop?

Although National Association of Home Builders officials still shy from endorsing heavy government investment in mortgage props, individual homebuilders and others in the industry didn't hesitate last week in pushing a proposal to use Treasury funds to purchase FHA and VA mortgages.

They said the scarcity and high cost of mortgage loans have chopped 10% off their plans for new housing starts this year.

But Administration spokesmen and mortgage lenders point to signs that the money market is easing, bringing prospects of a better 1960 homebuilding year than seemed possible three months ago. Therefore, they argue, the mortgage market does not need props.

Those divergent views met head on last week in hearings before the House Subcommittee on Housing. The group is considering a bill sponsored by its chairman, Rep. Albert Rains (D., Ala.). Among other things, his bill would pump $1 billion out of the U. S. Treasury into Federal National Mortgage Association (Fannie Mae) for the purchase of government-backed home mortgages.

Representative Rains and Democratic colleagues on the committee say their plan will avert a housing downturn like the one that preceded the 1957-58 business recession. Their preventative medicine is essentially the same as the antidote prescribed by the government in '58. The only difference this time is that the $13,500 ceiling on eligible mortgages could go up to $14,500 in high-cost areas.

Opponents of the measure, led by Housing and Home Finance Agency chief Norman P. Mason, contend that housing doesn't need a $1-billion emergency push. The general economic boom will spill over into housing, they say, while Treasury borrowing would just increase the cost of money and prices generally.

A changing mortgage market might lift private home starts even above the 1.2 million estimated by the Commerce Department last November in its construction forecast for 1960, they argued. Reversal of the downtrend in housing starts during the last two months of 1959 was cited to substantiate this feeling of optimism. (On a seasonally adjusted annual basis, the rate of private starts as reported by the Census Bureau rose from a low of 1.18 million in October to 1.21 million the following month and 1.31 million in December.)

This rise was contrary to expectations. It overshadowed a decline in FHA and VA programs, whose fixed-interest ceilings always cause a drop-off in volume when the cost of money climbs. FHA loan applications and new starts have decreased each month since June. VA business, hampered by an interest rate even lower than FHA's, has dwindled to insignificant volume.

The hearing failed, however, to bring out a counter indicator, which shows mortgage companies offering $35 million in one week of FHA and VA mortgages to Fannie Mae for purchase. That's up from $24 million just two weeks earlier. Agency officials don't know the reason for the rise, but they suspect it results from tightness of the mortgage money market. They don't think the recent increase in the size of mortgages Fannie Mae will accept—upped to $20,000 from the former $15,000—accounts for much of the added volume of offerings.

Homebuilder testimony at the hearings did not give 100% support to the Rains bill. Speaking as individuals, a panel of builders from around the country gave the $1-billion proposal their unstinted approval. And the Home Manufacturers Institute, representing the producers of factory-made houses, endorsed the idea without qualification.

But Martin L. Bartling, president of the National Association of Home Builders, supported the plan only as the last among alternatives. NAHB advocates first, the investment of National Service Life Insurance funds in Fannie Mae debentures to buy VA mortgages; second, legislation allowing builders to add the cost of mortgage discounts to FHA and VA mortgages (ENR Jan. 28, p. 46).

As a last resort, if neither of its first two proposals can be enacted, NAHB agrees that appropriation of money for Fannie Mae use in tight mortgage areas is the only solution.

Proposed legislation that makes a soft approach toward NAHB's No. 1 recommendation is awaiting action by the Veterans Affairs Committee of the House. Chairman Olin Teague (D., Tex.) has offered a bill authorizing VA to sell debentures in the private market for financing GI loans. The bill would also allow the Secretary of the Treasury to invest not more than 25% of NSLI funds in the VA obligations.

This provision would open the door a crack toward admitting use of veterans insurance funds for housing loans. It's an idea that Mr. Teague has advocated before. It has little chance of acceptance in Congress; even less at the White House.

The Senate is moving more slowly than the House on 1960 legislation affecting housing. Sen. John Sparkman (D., Ala.), housing chairman on the Senate side, is co-sponsoring an immediate authorization for college housing loans, exceeding the $250 million already proposed by Senators Jacob Javits and Kenneth Keating of New York.

**It's official . . .**

# Interstate Clearances: 16 Feet

Minimum vertical clearance for bridges crossing Interstate highways was raised from 14 ft to 16 ft this week by Secretary of Commerce Frederick Mueller.

The Department of Defense asked for the increase so that it could transport its huge intercontinental ballistic missiles across the country by truck (ENR Nov. 12, 1959, p. 25).

**The new clearance applies to bridges under design and some bridges under construction. But bridges under contract must be able to be changed without excessive cost or delay and without negotiating a new contract.**

In an urban area where more than one route enters or bypasses a city, the increased clearance will apply only to the route that can be most economically changed.

**No decision has been made about raising existing bridges.** Word on that will come later.

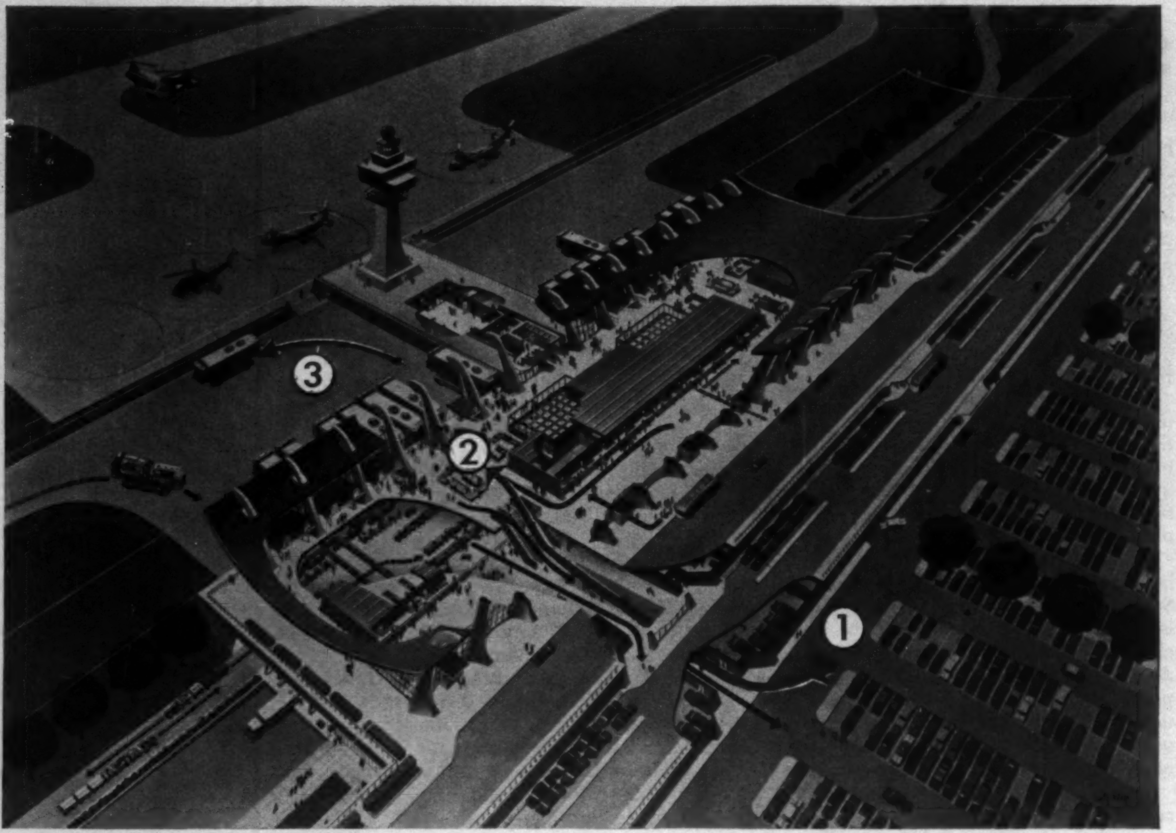
Details of the new clearance went to the states as part of criteria for preparing the revised Interstate cost estimate for Congress next January.

The number of traffic lanes permitted on an urban Interstate highway will be limited to eight in cities with populations of more than 1 million, to six lanes for cities in the 400,000 to 1 million range and to four for cities of less than 400,000.

The spacing of interchanges will be regulated. An average interval of not less than two miles is stipulated for urban areas, a minimum of four miles for suburban sections and at least eight miles for rural areas.

Other new limitations will control the use of frontage roads, grade separations and other accessory facilities.

The Department of Commerce will permit deviation from the regulations where conditions demand it and the Bureau of Public Roads approves.



**Arrows trace walk of passenger from arrival at terminal to departure in mobile lounge.**

# Terminal Makes Flying Easy on

Bids for construction of a $9-million terminal building for Dulles International Airport will be opened March 1.

The terminal, which will go up on a 15-sq-mi site in eastern Virginia, will be part of the world's first commercial airport to be planned from the beginning for jet traffic (see p. 42).

An unusual approach to passenger handling made possible the design of a compact, rectangular terminal, free from the finger piers and other appendages used at most airports for loading and unloading airliners.

Dulles International Airport will use a ferry system that will carry passengers between planes and the terminal in mobile lounges (ENR Apr. 9, 1959, p. 23).

Eero Saarinen and Associates, Bloomfield Hills, Mich., designed a two-level structure with a cable-slung roof that provides a column-free concourse 150 ft wide and 600 ft long.

Concrete columns at the front and rear of the concourse will support steel cables on which precast concrete panels will be placed to make a roof. These concrete piers, placed on 40-ft centers, will slope outward to counteract the tension of the roof cables and give the structure a dynamic look.

The columns will be 65 ft high on the frontal approach side of the terminal and 40 ft high on the side facing the apron. The floor of the 90,000-sq-ft concourse is designed as a compression member to resist column thrust induced by the roof load.

An acoustic ceiling will hang below the precast concrete panels. The panels will be covered by insulation and roofing.

The forthcoming contract award will be only for the terminal's basic structure. The glass enclosures between the huge columns, the interior finish, and a tower that will rise above a wing on the field side will be covered by subsequent contracts.

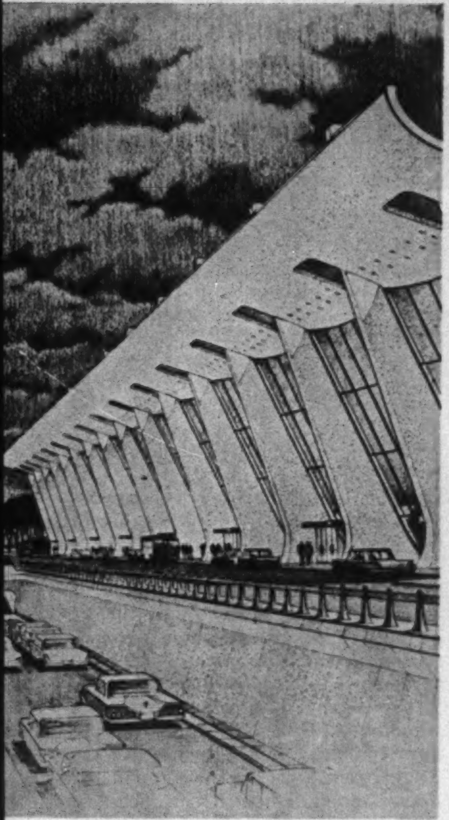
Dulles International Airport has been designed to handle 1965 air traffic and accept expansions that will enable it to cope with the traffic of 1975. The 600-ft-long terminal can be expanded to 1,200 ft by the addition of 300-ft extensions at each end.

Initial construction provides for 24 gate positions for the operation of 20 mobile lounges. Both the terminal and the mobile lounges are supposed to be ready for the opening of airport operation in the summer of 1961.

The Federal Aviation Agency, builders of the airport for the federal government, gave a $750,000 contract to Chrysler Corp., Center Line, Mich., to develop a prototype mobile lounge (ENR Oct. 22, 1959, p. 27). The vehicles will be self-propelled in either direction and equipped with operating controls at both ends. They must be self-leveling to adjust to airliner door sills that vary in height from 8 ft to 13½ ft from the pavement.

The architect-engineer team that planned Dulles designed it to reduce walking distances for passengers to a minimum. The terminal building and its huge concourse is the center of this operation.

Incoming buses and taxis will unload passengers on an upper ramp at concourse level in front of entrances reserved for the various airlines (see picture at left). An 800-car parking lot will be built immediately behind the



**Columns carry cable-slung roof.**

# the Feet

terminal. Planners have provided for an ultimate capacity of 8,500 cars.

After entering the terminal at the concourse (1) the passenger walks straight ahead to his airline ticket desk and then to the bay on the other side of the building, where the mobile lounge is waiting (2). The mobile lounge takes him and other passengers to an airliner waiting on the service apron (3). From the time he leaves the bus to the time he takes his seat on the plane, there are no steps for him to climb.

Passengers on incoming planes will enter the concourse from the mobile lounges and take a moving stairway to the lower level to pick up baggage. From the baggage counter they can either catch a departing vehicle on a lower loading ramp in front of the terminal or walk down a slight incline to the parking lot.

The average airline passenger has to walk 1,600 ft from his parked car to his airplane. The designers of Dulles International Airport say that the unusual layout there will reduce this trek to only 350 ft.

# State Probes Road Costs

The running debate between consultants and government engineers over who does highway work more economically shifted last week from professional societies to the Pennsylvania legislature.

A joint committee of the Pennsylvania House and Senate spent two days listening to consultants, government employees and neutral experts. The consultants favored consultants; the highway department spoke up for itself; the neutral experts hedged; and the committee reached no conclusions.

Pennsylvania in the past has leaned heavily on consultants for highway work because it has had difficulty attracting adequately trained personnel. The investigation was set off by a report by the U. S. General Accounting Office highly critical of the state's policy regarding consultants.

As one result, the highway department told the legislators, there are plans to increase the department's staff of salaried engineers by 167 during the next 18 months. But Fred S. Poorman, deputy secretary in charge of engineering, was quick to point out that the additions do not mean the highway department is closing the door on consultants.

In fact, the department expects to continue its present policy of using consultants on virtually all major work, Mr. Poorman said. The department will pay out $23 million in consultant fees between fiscal '59 and '61, he said.

Championing the consultants cause was George S. Richardson of Pittsburgh, immediate past president of the American Institute of Consulting Engineers. He told the committee: "A study of records which have been available to me show conclusively that private engineering firms can perform engineering work considerably more economically than large public agency staffs. It is undoubtedly in the public interest to use these firms."

According to Mr. Richardson, California, with an all-staff engineering system, spent 24.1% of road construction costs on engineering between 1953 and 1958. He contrasted that with the Ohio Turnpike, on which all engineering was done by consultants; engineering came to 3.74% of total road construction cost, he said.

Pennsylvania Highway Secretary Park H. Martin reported that the state pays an average of 3.7% of costs for consulting engineers. He said that 76% of Pennsylvania's highway planning and design work is handled by consultants at present. The figure was 90% in 1958; the goal for the future is 60%.

The committee tried to draw a definite stand on the relative value of consultants vs. government engineers from Carl E. Fritts, vice-president in charge of engineering of the Automotive Safety Foundation. But Mr. Fritts wouldn't be cornered.

"I have no quarrel with the use of consulting engineers," he said. "It depends on the circumstances facing the department." However, he added, every state highway department should have a "hard core" of its own engineering personnel.

One committee member was critical of the number of highway department employees in engineer categories who were not registered or did not have degrees. Rep. Blaine C. Hocker said this was "making employees engineers simply by calling them engineers." He was told, however, that all engineers added to the roster during the past year passed state civil service tests.

Of the 704 Pennsylvania Highway Department employees now in engineering classifications, 32% are registered or have degrees, the committee was told. Goal for June 1961 is 871 engineering employees, with 42% registered or holding degrees.

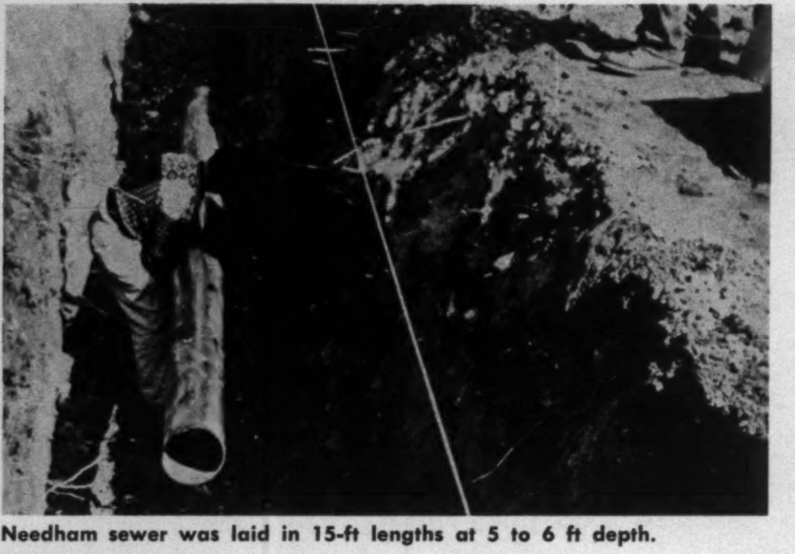
## Rising Salaries Worry California Consultants

California consulting engineers are worried about the effect of rising salaries on their profits. The problem dominated the seventh annual meeting of the Consulting Engineers Association of California in Ojai last week.

Salaries paid by consulting engineers have increased in recent years 50% faster than the ENR Construction Cost Index, according to Robert M. Kennedy of San Francisco. He pointed out that overhead costs are also increasing, but that government agencies retaining engineers are not allowing increased overhead charges. He suggested two possible solutions for consultants: increase man-hour efficiency, or increase fees.

As another indication of the salary squeeze, George R. Maurer of San Francisco presented results of a confidential salary survey. It showed that public agencies in California are now paying higher salaries than are California consulting firms for comparable work. For example, starting salaries paid graduate engineers by public agencies are, on the average, 8% higher than those paid consultants.

On the other hand, CEAC gave support to an effort of one public agency. It urged the California legislature to grant larger operating funds to the California State Building Standards Commission.



**Needham sewer was laid in 15-ft lengths at 5 to 6 ft depth.**

## Big Plastic Sewers Get Tryout

The biggest plastic sewers on the continent are now undergoing in-service tests in the U. S. and Canada.

Details have just been made public on a 300-ft length of 8-in. municipal sanitary sewer laid nearly a year ago in Needham, Mass. Similar disclosures will be made shortly on 1,700 ft of 12-in. industrial sewer installed early last spring in Ontario. And 400 ft of 8-in. municipal sanitary sewer is under observation in Little Rock, Ark.

The Needham sewer is a lateral extending from a tile trunk sewer to a dead-end manhole. House connections to the plastic sewer are also plastic.

The pipe was buried about five or six feet deep. It was bedded at least up to its spring line in washed stone ranging in size from ½ to ¾ in. Backfill was applied by hand to a depth of a foot above the top of the pipe and by machine from there up.

The joints are butt-type, solvent-welded, with sleeve fittings.

House connections were made by cutting holes in the main and welding flanged 45-deg wye fittings over the holes.

There is no sign of deterioration or leakage, according to E. A. Symonds, Needham sewer superintendent. The lateral carries only domestic sewage, he says. As a further test for possible effects of industrial wastes present in the Needham municipal system, he has had a section of the pipe immersed in the wet well of a local sewage treatment plant for about a year. That too is holding up, he reports.

The plastic is a modified high-impact styrene, according to the pipe manufacturer, Evanite Plastic Co., Carrollton, Ohio. The firm is a division of Evans Pipe Co., a manufacturer of clay sewer pipe.

## Huntington Ends Ohio Holdout

Faced with the threat of court action by the eight-state Ohio River Valley Water Sanitation Commission (Orsanco), Huntington, W. Va., has agreed to quit dragging its feet in constructing sewage treatment facilities.

Huntington holds the dubious distinction of being the biggest remaining city (pop. 90,000) on the Ohio that has not completed sewage treatment works, according to Edward J. Cleary, Orsanco's executive director and chief engineer. The city has completed about half of its program, including treatment plant, pumping stations, interceptors and force mains.

Until now Huntington has been building on a pay-as-you-go basis, using bond money on hand plus future collections of sewer service charges. Target completion date was 1969; this despite repeated warnings from the West Virginia Water Resources Commission and Orsanco to speed construction.

In mid-January Orsanco threatened court action if the city did not come up in 15 days with an acceptable financing plan, timetable and completion date.

Huntington adopted a resolution January 19 to speed up the construction program. Three days later the city submitted a revised schedule calling for completion by July 1, 1965. The city also promised to issue an additional $3.2 million in bonds to finance the rest of the work.

### Work Worth $108 Million To Be Let on ICBM Bases

The Corps of Engineers will let $108 million worth of contracts in the next few months for construction work on four new bases for the Atlas intercontinental ballistic missile.

The Air Force announcement of the selection of sites for these bases marks the first location of a base east of the Mississippi River. This first eastern rocket launching center will be in the vicinity of Plattsburgh Air Force Base, N. Y., about 25 miles south of the Canadian border.

The other three sites chosen are Altus AFB, Altus, Okla.; Dyess AFB, Abilene, Tex., and Walker AFB, Roswell, N. M. The estimated construction cost of these bases is $47 million each.

The announcement of these four bases completes the list of 11 launching sites for the 13 Atlas squadrons in the present program.

The Air Force says the four new bases will be built with varying degrees of hardness. This means they will be partially or completely buried for protection against a counter-missile bombardment.

The Atlas ICBM launching sites at Schilling AFB, Salina, Kan., will be built completely underground, like the Titan bases, according to a recent Air Force announcement. The Schilling AFB site was selected several months ago. The decision to construct it underground could mean that the four sites just chosen will also be built that way.

### Consultants Will Review Feather River Project

California has retained an independent consulting engineer to review the state's engineering and economic feasibility studies of the Feather River Project.

The huge water plan has drawn sharp criticism from several quarters recently.

The engineering company, Charles T. Main, Inc., Boston, will work with a financial consulting firm yet to be selected. The financial consultant will review plans for handling the $1.75-billion bond issue proposed to pay for the project.

The California State administration hopes the studies will satisfy critics and potential investors.

The consulting firms will be required to give preliminary findings by next June 1. The state expects the findings to still some of the mounting opposition that now threatens success of the November vote on the bond issue proposal. The final reports won't be complete until after the vote. Such independent feasibility reviews are normally required by lenders when considering big issues.

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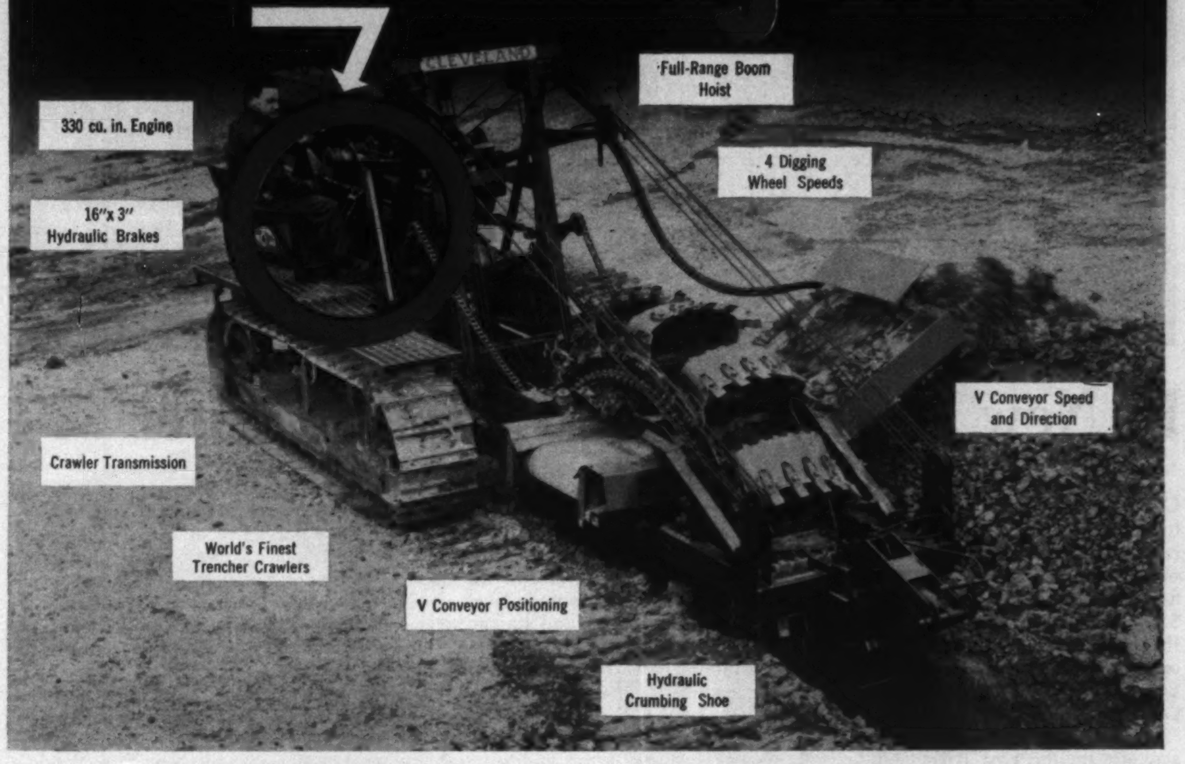

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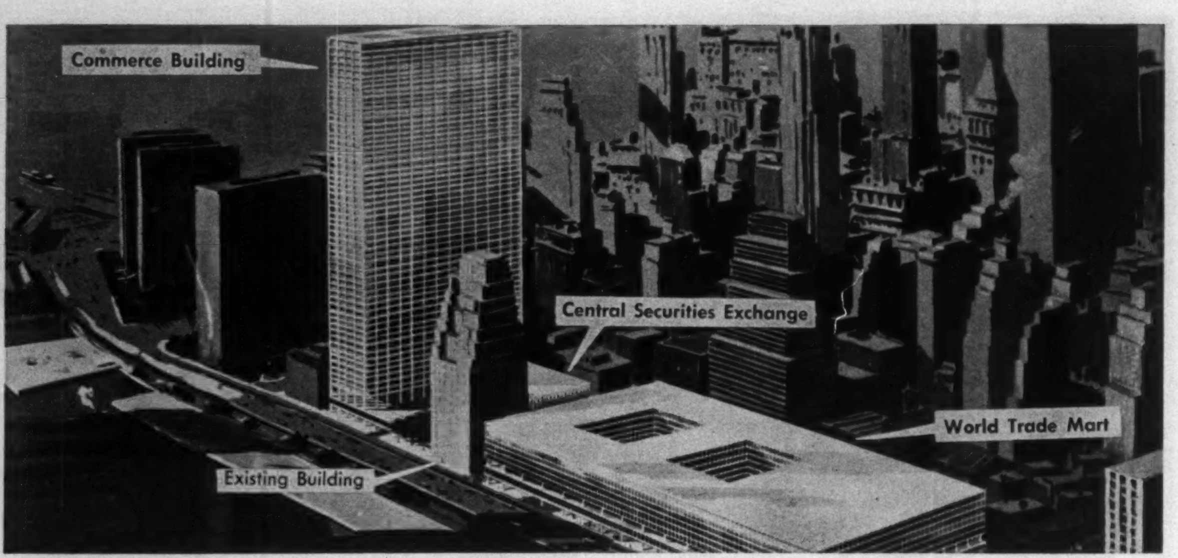

# In New York, a World Trade Center . . .

A proposal to build a World Trade Center in the financial district of downtown Manhattan generated widespread enthusiasm among New York business executives and government officials last week. Estimated to cost $250 million, the center would be the first stage of a $1-billion redevelopment program for lower Manhattan proposed over a year ago (ENR Oct. 23, 1958, p. 77).

The plan calls for clearing a 13½-acre site on the East River. Only two existing buildings would remain. An elevated plaza, two stories above grade, would cover the entire site. Three buildings would rise out of the plaza—a nine-story World Trade Mart, 880 x 365 ft in plan, with two interior courtyards; a 50- to 70-story commerce office-hotel building; and a Central Securities Exchange Building.

The giant World Trade Mart would provide office and display space for international trade activities, offices for insurance brokers and travel offices. It would contain exhibit space for governmental trade missions, space for commodity exchanges and an international clearing house for merchants.

The commerce building would house U. S. and foreign business, banking and brokerage firms in international markets. A world trade club would provide meeting rooms for foreign and American citizens engaged in this field. Ten floors at the top of the building would furnish 500 to 700 hotel rooms to accommodate transient shippers and international merchants.

Planners hope to have the New York Stock Exchange as a tenant in the Central Securities Exchange Building to be a world trading center. Stock Exchange officials have made no commitment yet.

Shopping arcades occupy the main concourse at street level and the floor above. One underground level contains parking, loading and storage areas.

A proposed heliport, adjoining the site on the East River, would provide rapid access to metropolitan airports.

The Lower Downtown Manhattan Association, a civic organization representing business firms and real estate owners in downtown New York, sponsors the redevelopment studies. The association's report recommends that the Port of New York Authority make detailed studies on planning, financing and putting the center into operation. This recommendation was sent to Governor Rockefeller of New York, Governor Meyner of New Jersey and Mayor Wagner of New York City.

Association Chairman David Rockefeller said he expected most, if not all, development money to represent private investment. There is no target date for construction. But Mr. Rockefeller expressed hopes that the Trade Center could start taking leases when foreign visitors arrive for the New York World's Fair in 1964.

Skidmore, Owings, and Merrill, New York City architects, are planning consultants for the Lower Downtown Manhattan Association.

# . . . In Pittsburgh, Modern Housing

Pittsburgh's East Hills Housing Project will test new concepts in homebuilding and community planning. Modern construction materials and techniques will be used to build a diversified community of 1,680 units.

Construction costs ranging from $6,000 to $17,000 per unit will reflect the economic difference between high- and low-income families integrated with a predominantly middle-income group.

An approximately equal number of row houses, garden-type apartments, and high-rise apartment units will make up the bulk of the project. Eighty detached houses will also occupy the 130-acre East Pittsburgh site.

Construction will feature aluminum siding, load-bearing walls and partitions combining metals and plastics with plywood, plasterboard and other conventional materials. Designers also contemplate using precast, prestressed wall panels, floor and roof units with plumbing fixtures and electrical conduit cast in.

Designers Sert, Gropius and Koch, Cambridge, Mass., architects, are providing gardens for nearly all units. They divide the community into neighborhoods with their own swimming pools, play areas and other recreational facilities.

Action-Housing, Inc., planners of the project, will administer a $2-million development fund to be obtained primarily from local industry and business. Action-Housing is a quasi-public agency closely related to the national ACTION organization.

Officials hope to interest private developers in a construction start this year.

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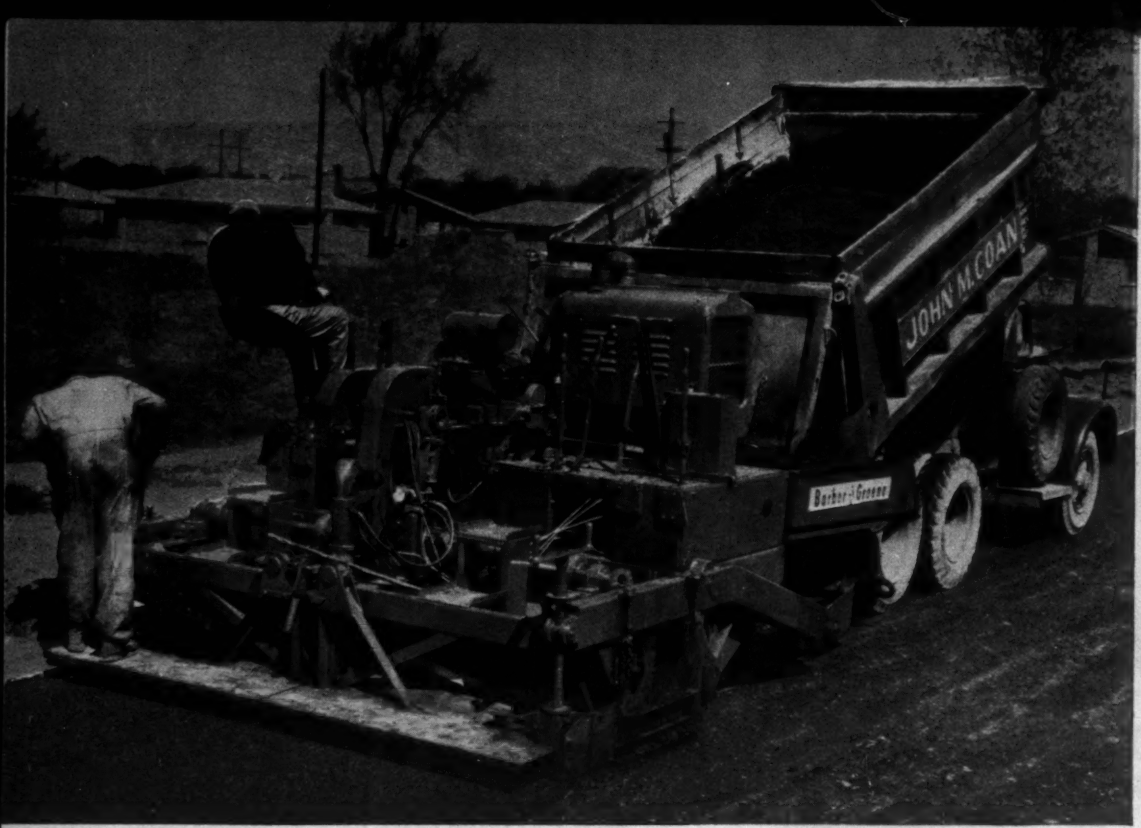

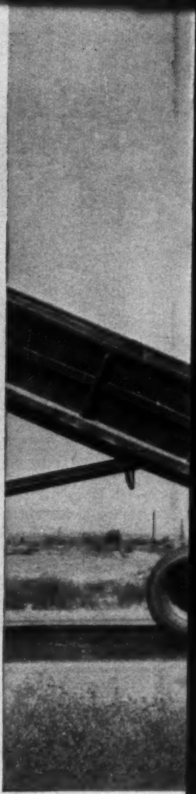

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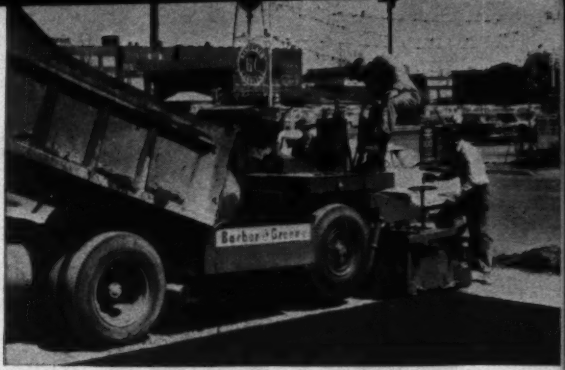

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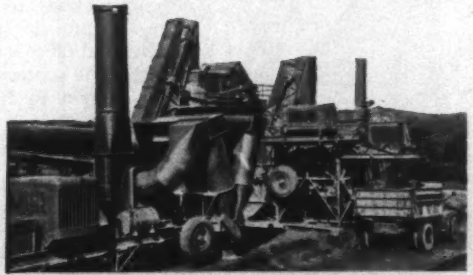

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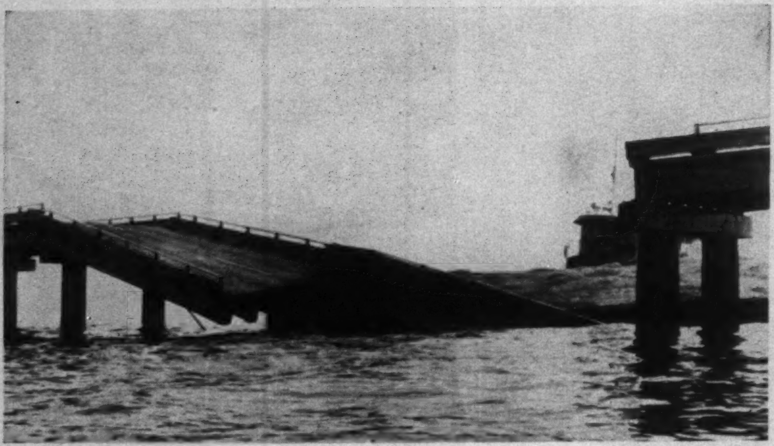

# Barge Belts Pontchartrain Bridge

The 24-mile-long Lake Pontchartrain Causeway came out second best in a recent bout with a barge. In dense early morning fog, the empty barge sheared off concrete piles supporting two 52-ft deck sections and sent them plunging into the lake.

Engineers estimate that repairs will cost $70,000 and take at least 10 days. Immediate start of repairs was delayed by high winds.

The $46-million causeway, opened in 1956, carries an average of 3,200 vehicles per day. Estimated loss in tolls while repairs are being made is $60,000. Toll loss will be recovered through insurance based on performance average.

Prestressed Concrete Products Inc., Mandeville, La., will make the repairs, using spare deck sections previously stockpiled at the north end of the causeway.

Neither of the fallen sections is salvagable. A third section, damaged but still in place, also will be replaced.

This is the second time the bridge has been damaged by a barge. In March, 1956, while the causeway was still under construction, a barge knocked out two deck sections.

## Around the World . . .

- **Interstate roadblock**—The Vermont Home Rule Organization is campaigning against Vermont's participation in the federal Interstate and Defense Highway System, claiming that the state's economy can't stand the $40-million share of the costs. The organization is gathering support for a move to put the issue before voters in a statewide referendum.

- **Costly cure**—Madrid will spend $33 million to build a mile-long avenue in the center of the city to alleviate traffic difficulties. The 213-ft-wide avenue will displace 35,000 persons.

- **Giant steel plant**—The Italian government will finance a $304-million steel works to be built near the port of Taranto in southern Italy. Production will be one million metric tons annually. Construction time is estimated at two years.

- **Atlanta center**—A $12-million regional shopping center will be built in southwest Atlanta. Developers of the 70-acre project are Atlanta Architect J. C. Portman, Jr., and Trammel Crow and W. R. Hahn of Dallas.

- **Canadian pulp mills**—Construction of six privately operated pulp mills in British Columbia is under consideration by the Canadian government. With the program, British Columbia's timber yield can be increased threefold over its current annual production of 1 billion cu ft.

- **Turnpike tunnels**—A consulting engineer firm engaged by the Pennsylvania Turnpike Commission has recommended construction of two $10-million tunnels to supplement existing tunnels between Donegal and Bradford. The firm attributes current traffic jams to the inadequacy of the two-lane mountain underpasses.

## Cast-Iron Bearing Breaks In Suspended Steel Roof

Builders of the Pan American Passenger Terminal at New York International Airport have run into a snag. One of the bearings under the suspended steel roof girders failed. That part of the roof dropped about 1 in. before the rest of the structure came to its support.

The roof is an ellipse with a 528-ft major axis and 422-ft minor axis (ENR Mar. 5, 1959, p. 30). It is carried on 32 radial steel girders, which project 114 ft past columns set in an elliptical ring. The outer ends of the girders are supported by steel cables, which extend over posts seated atop the girders over the columns.

The bearings under the girders at the columns are unusual. To meet height limitations, a double rocker was used. Each rocker was pinned to an equalizer, in turn pinned to the girder. The failure occurred in one of the equalizers, a malleable iron casting. Metallurgical examination revealed some defects in the metal.

Since the 32 castings were all made by the same foundry process, it was considered probable that other units might have similar defects. To save time, all 32 bearings will be replaced with fabricated structural steel parts. The replacement is not expected to delay completion of the building.

## Cambridge Research Center To Pierce Height Limit

A bill introduced in the Massachusetts legislature is expected to exempt the town of Cambridge from an 1891 act limiting all structures except church steeples to 125-ft height. It would clear the way for construction of a proposed 15-story tower for an industrial research center in the downtown area.

The project includes three other multistory buildings, several one- and two-story buildings, a garage and parking areas.

First stage of construction, scheduled to begin soon, will provide 300,000 sq ft of laboratory and office space for leasing by industry. The center will ultimately provide 1 million sq ft of floor space.

A new corporation, formed by Massachusetts Institute of Technology and Cabot, Cabot, and Forbes Co. of Boston, will own and operated the research center.

Cabot, Cabot and Forbes will design and build the center through its operating divisions: Cabot, Cabot, and Forbes Associates, Inc., architect-engineer; and Aberthaw Construction Co., general contractor.

# *Why walking dragline owners take the jobs they want*

Unfortunately, many people don't know a whole lot about walking draglines. We say unfortunately because *where walking draglines apply*, nothing — and that means no machine built in America today outside the wheel excavator — can move earth at such low cost. How low? Four cents . . . six cents . . . or eight cents a yard, and that is cheap! That's why walking dragline owners *take* the jobs they want.

Here's why dirt-moving costs are lower: The walker sits on a "tub" that gives it great flotation. It walks on a simple, giant system of beams which lift it up . . . move it ahead . . . set it down. Maintenance is low compared to *any* crawler excavator. The life span of a walker is literally unknown. The rigs don't wear out as fast, therefore have greater resale value.

The extra stability of a walker lets you use longer booms, work a greater area from each set position, reducing the number of moves. For a like investment, you can get a bigger capacity walker than crawler — you move more dirt per hour per dollar invested.

How mobile is a walker? Walkers travel at about half the speed of comparable size crawlers, but maneuver much faster because in reality they don't have any maneuvering problems that compare. You don't turn a "tub" around to maneuver! You simply *swing* around, the legs go with you, and move out wherever you choose. The time saved makes up for the slower travel speeds.

How do you make the choice? In simplest terms, the walker is best where flotation is a major problem, where deep digging and long reach are required, or where you have huge quantities of material to be moved at the lowest possible cost per yard.

Walkers don't need or use mats in soft ground. You don't have profits tied up in used mats when the job is done. Walkers have stability that allows them to work in precarious locations out of the question for crawlers.

Don't misunderstand. The walking dragline won't cure all excavating cost woes. There are jobs where crawler machines are better by far. And, there are jobs where you will throw away profits by using anything *but* a walker.

If there's a question in your mind, and you are interested in making a good profit on a job, you should know the facts before you make an investment. We'll welcome the opportunity to talk more about *how* walkers work . . . *where* they work best.

We may tell you *not* to buy a walker. Remember, Bucyrus-Erie builds crawlers, too.

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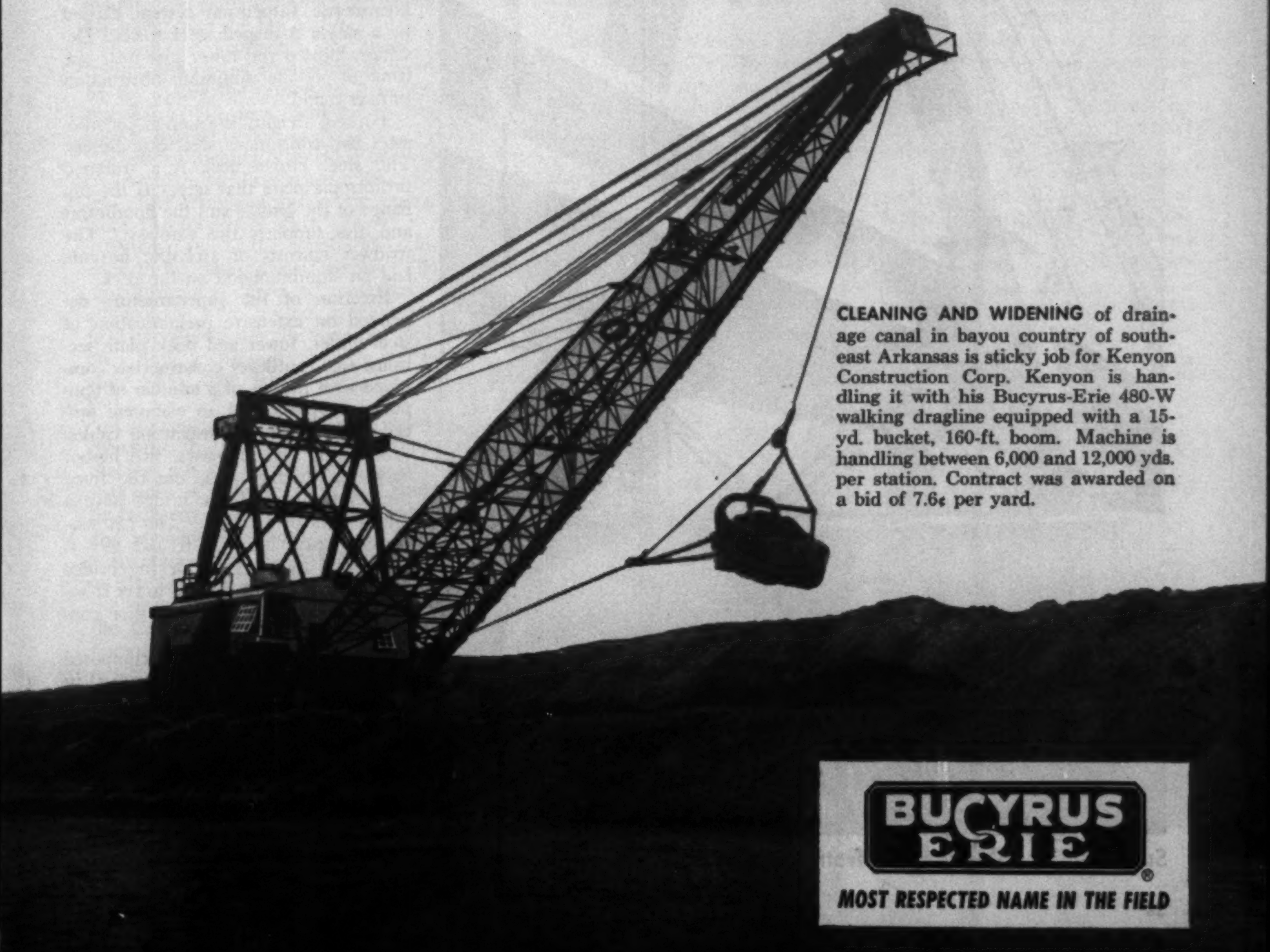

**CLEANING AND WIDENING** of drainage canal in bayou country of southeast Arkansas is sticky job for Kenyon Construction Corp. Kenyon is handling it with his Bucyrus-Erie 480-W walking dragline equipped with a 15-yd. bucket, 160-ft. boom. Machine is handling between 6,000 and 12,000 yds. per station. Contract was awarded on a bid of 7.6¢ per yard.

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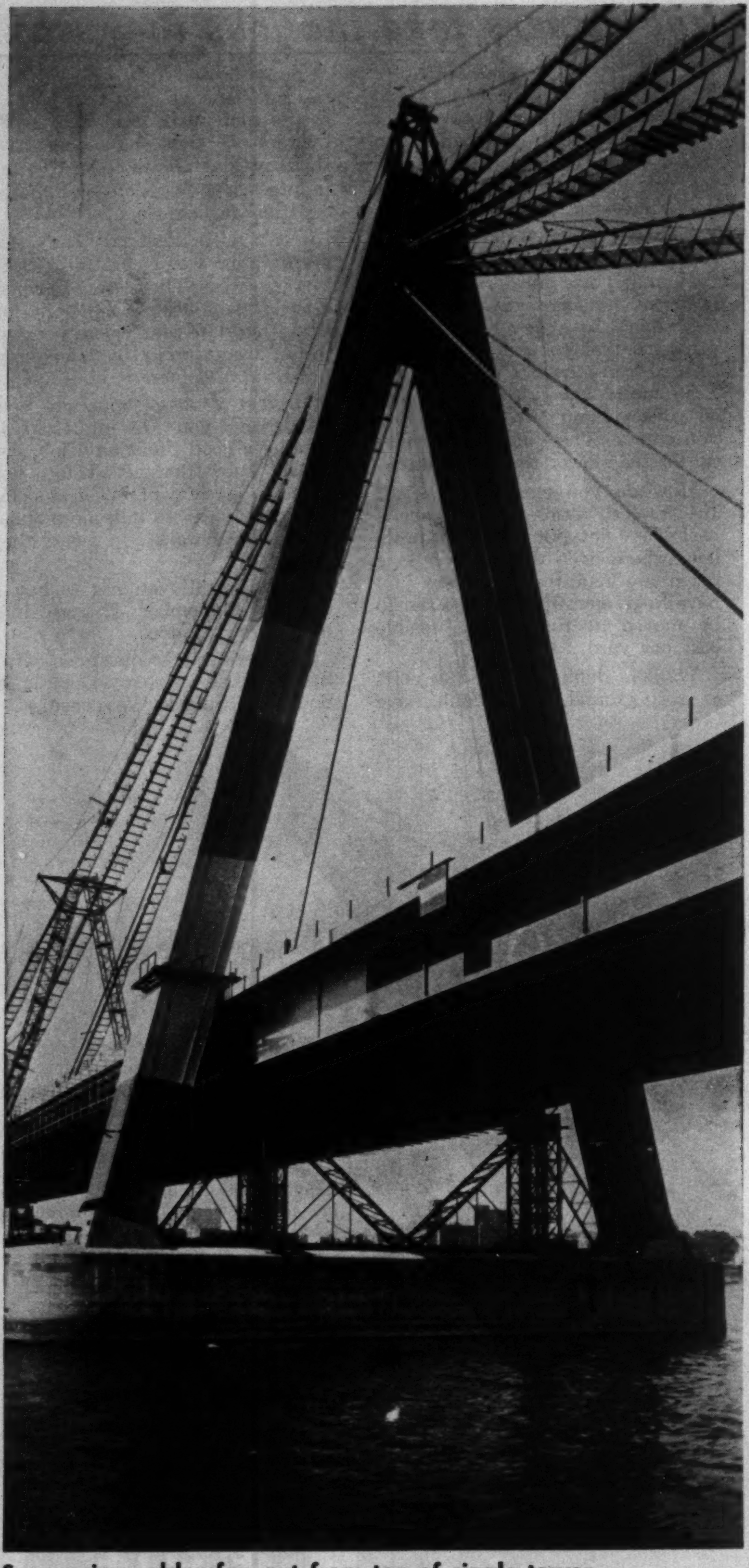
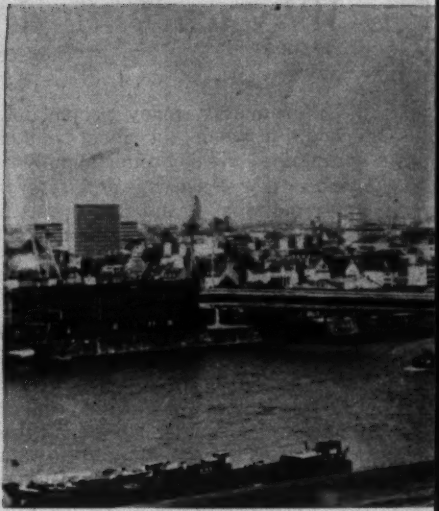


Suspension cables fan out from top of single tower.



# A-Shaped

The Severin Bridge across the Rhine at Cologne has been completed and opened to traffic after three years of construction.

**The bridge is unique in its use of an asymmetric suspension system carried by a single A-shaped steel tower.** Designers located the tower pier near one bank to provide minimum obstruction to river traffic.

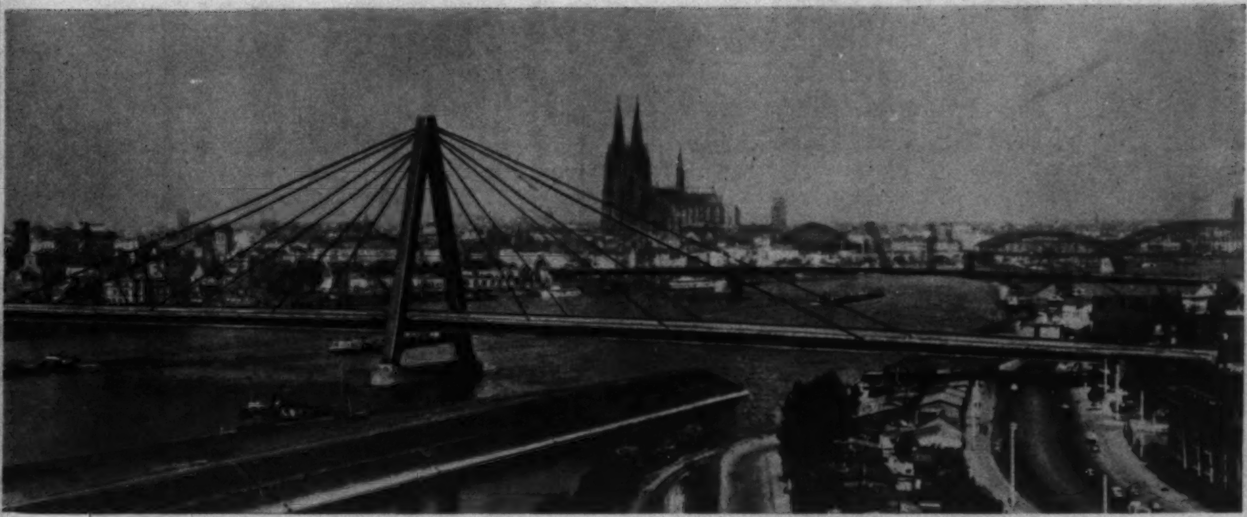
To save weight, the design incorporates two continuous steel box girders. The steel bridge deck is a stiffened orthotropic plate that serves as the top flange of the girders and the floorbeams and also supports the roadway. The roadway consists of asphaltic hot-mix laid on aluminum foil on the deck.

**Erection of the superstructure depended on extensive prefabrication of steel girder, tower and deck plate sections; free cantilever construction combined with the use of a number of temporary supports; and an elaborate procedure for installing suspension cables.**

Spanning two highways, two harbor basins, a wharfage area, and the river, the seven spans of the bridge have a total length of 2,226 ft. The two suspension spans are 990 ft and 495 ft long. All foundations for the bridge are on piles, except for the tower foundation, which is a concrete pier constructed to rock in a caisson.

The suspension spans are composed of 45 separate sections, varying in length from 47 to 53 ft. The box girders and deck for each section were shop welded; the deck was prefabricated in three parts, later assembled on the job. The prefabricated sections were shipped by rail and barge.

The box girders are 10½ ft wide, vary in height from slightly under 10 ft to



# Tower Supports Rhine Bridge

about 15 ft, and are spaced about 73 ft c-c.

Deck plates are about ½ in. thick and are stiffened by longitudinal web plates spaced about 12 in. apart under the roadway and 2 ft apart under the trolley car tracks over the box girders.

Transverse floorbeams are about 3 ft deep and spaced at intervals of about 6½ ft. Along the centerline, designers placed a 30-in.-deep stiffener to distribute unsymmetrical loads.

Torsional rigidity is provided by deep transverse girders between the box girders. The transverse girders are spaced from 141 to 239 ft apart.

Welders joined the longitudinal stiffeners to the deck plates at the site. The cross-girder and center-web splices and connections were riveted, as were the field connections for the main box girders. Bulk of the superstructure is low-alloy ST52 steel (yield point, 51,200 psi).

**The contractor erected the superstructure by the cantilever method, making use of temporary supporting structures as necessary until load could be transferred to the suspension cables and permanent supports.**

**Erection of the superstructure began on the Cologne side, the left bank of the river.** Because of heavy traffic on the Cologne-Bonn highway, the contractor could not begin at the abutment. Instead, construction began at pier No. 2 (see drawing) and proceeded at first toward the suspension spans.

Construction of the left bank section was done by the use of a temporary supporting structure. The contractor first used an ordinary stiffleg derrick to lift bridge components into position; later he used a twin stiffleg. The 990-ft span was advanced as a cantilever about 220 ft beyond pier 3. Workers then reversed the twin derrick, moved it back to pier No. 2 and erected the bridge steel toward pier 1 and beyond to the abutment, cantilevering where necessary.

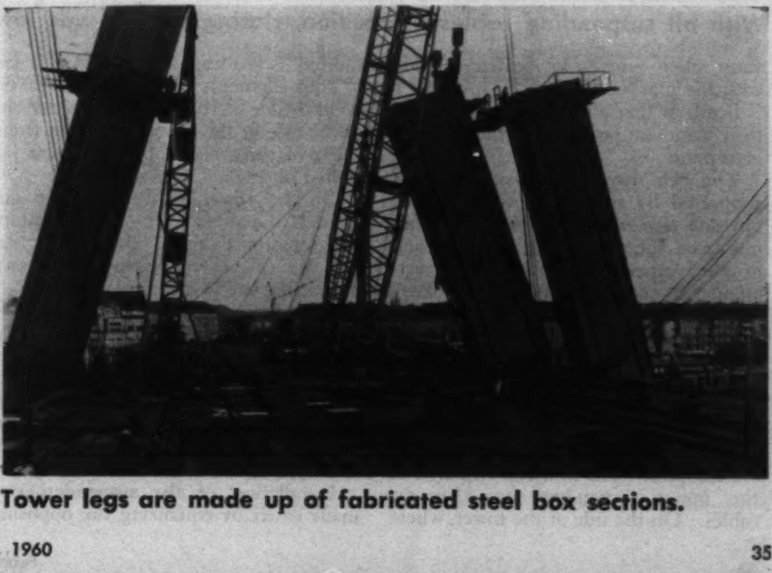
**On the right bank the builder first erected the superstructure between pier 5 and the abutment.** A heavy derrick and a twin stiffleg derrick were used to handle and assemble the bridge sections. Workers next installed two temporary supporting between pier 5 and the tower pier in the river; they also built a support in the river beyond the tower pier for use in supporting the span as it was cantilevered toward the closure point.

The temporary structure in the river were fitted with jacks, which raised the end of the cantilever section to ease installation of the suspension cables. The contractor also built two temporary supports on the tower pier.

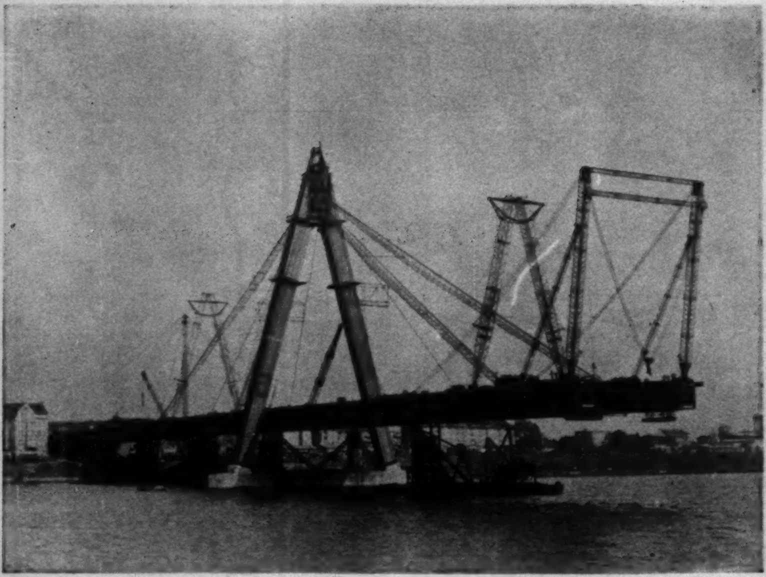
**Workmen completed construction of the superstructure from the right bank to the temporary supports in the river. They then built the tower.** A floating crane, working around the tower pier, lifted and set the 100-ton lower sections of the A-shaped tower. The contractor used an A-frame derrick to construct the remainder of the 260-ft tower.

The tower legs are made up of hollow-box sections, anchored in concrete at the bottom and rigidly joined at the top. Designers placed longitudinal and transverse stiffeners inside the box sections.

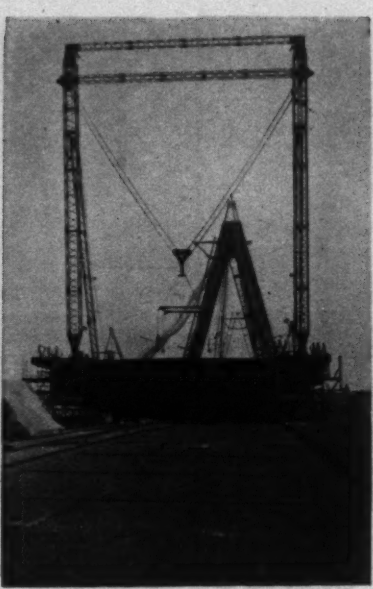
The superstructure rests on brackets on the tower legs. One of the trans-



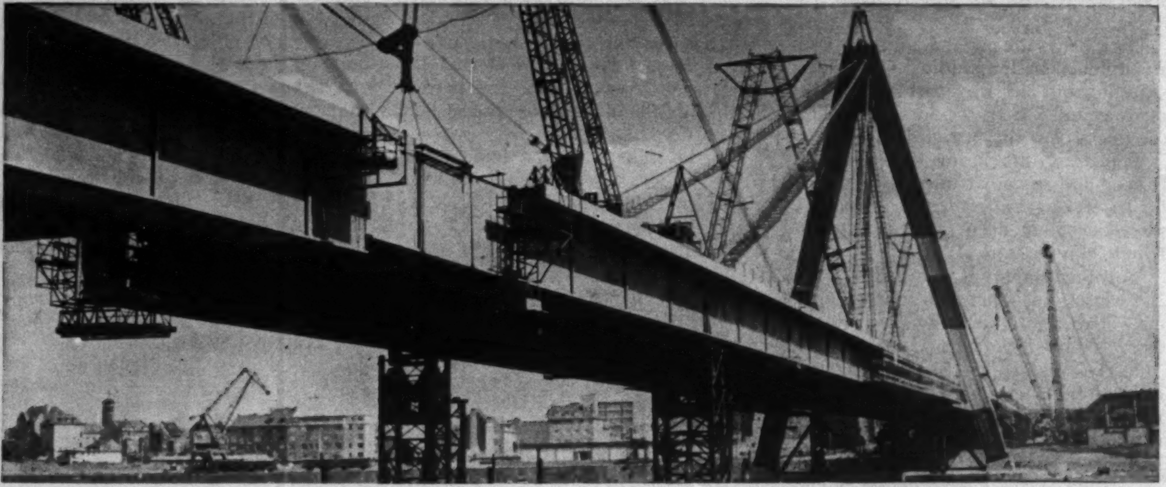
**Tower legs are made up of fabricated steel box sections.**



**Builder used ingenious methods for the long span, including . . .**



**Jacking to install final cables.**



**With all suspending cables in position, closing section was lowered into place.**

verse plate girders is located in line with the brackets.

Bearings that allow rotation in a vertical plane are provided at these points of support.

**The two suspension spans are each supported by six sets of cables (three on each side of the roadway) that fan out from the top of the tower. Each of the suspenders consists of a rectangular or square arrangement of steel-wire cables.**

To permit installation of the lower and center suspenders in the 990-ft span, workmen raised the cantilever end of the superstructure nearly 4 ft above the horizontal.

Design and connection of suspenders are complex. The four top elements of the upper suspenders are 3¼-in.-dia cables. On the side of the tower, where the pull is greater, 16 cables (four layers of four elements each) were installed on each side of the bridge. On the opposite side of the tower, 12 cables (four layers of three elements each) were installed on each side.

On the 16-cable side, workmen anchored the top layer of elementary cables to the tower. The remaining cables are continuous, passing over saddles at the top of the tower.

Designers adopted a similar pattern for the center suspenders, which incorporate a smaller number of lighter elementary cables. The top layer on the "pull" side is anchored to the tower, while the remaining layers are continuous. All the lower suspenders are anchored to the tower.

**Installation of the suspenders was made easier by equalizing the opposing horizontal forces acting on the cables at the tower.**

**To accomplish this objective, engineers provided means by which the complete tower could be tipped temporarily toward the 990-ft span.** For the lower and center cables, workmen tipped the tower to the required position with movable wind braces mounted on the bridge superstructure. They also made use of temporary suspension frames to support the cables in lieu of conventional lifting devices.

When the cables had been installed, workmen lowered the jacks on the temporary support until the load was taken by the lower and center cables, and the tower structure was inclined sufficiently to obtain the required amount of prestressing when the structure was complete. At this stage, the top of the

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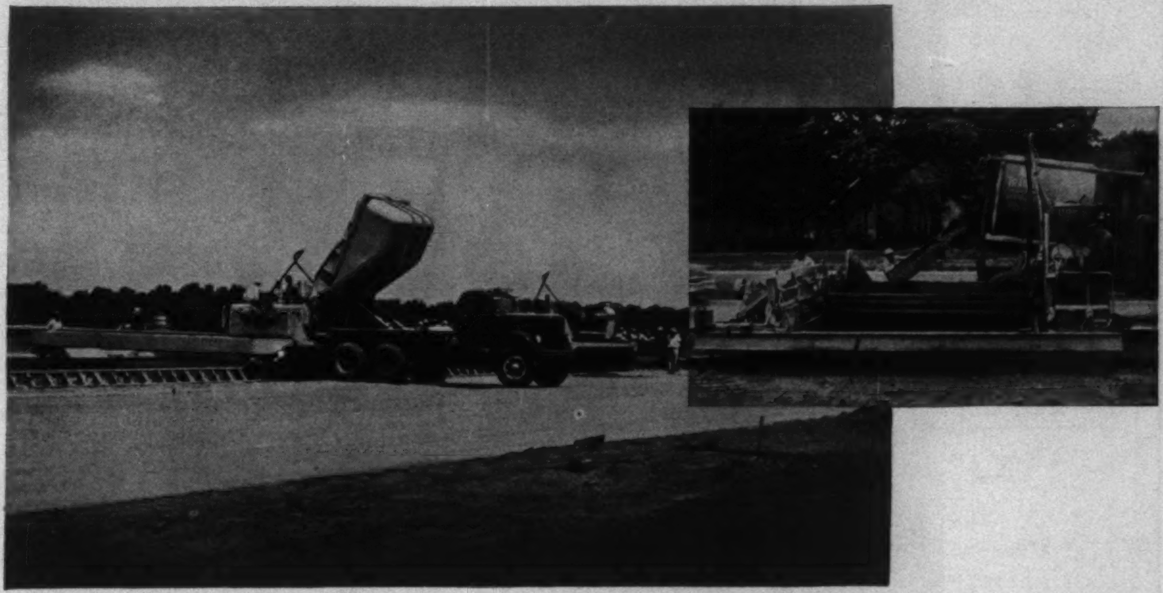

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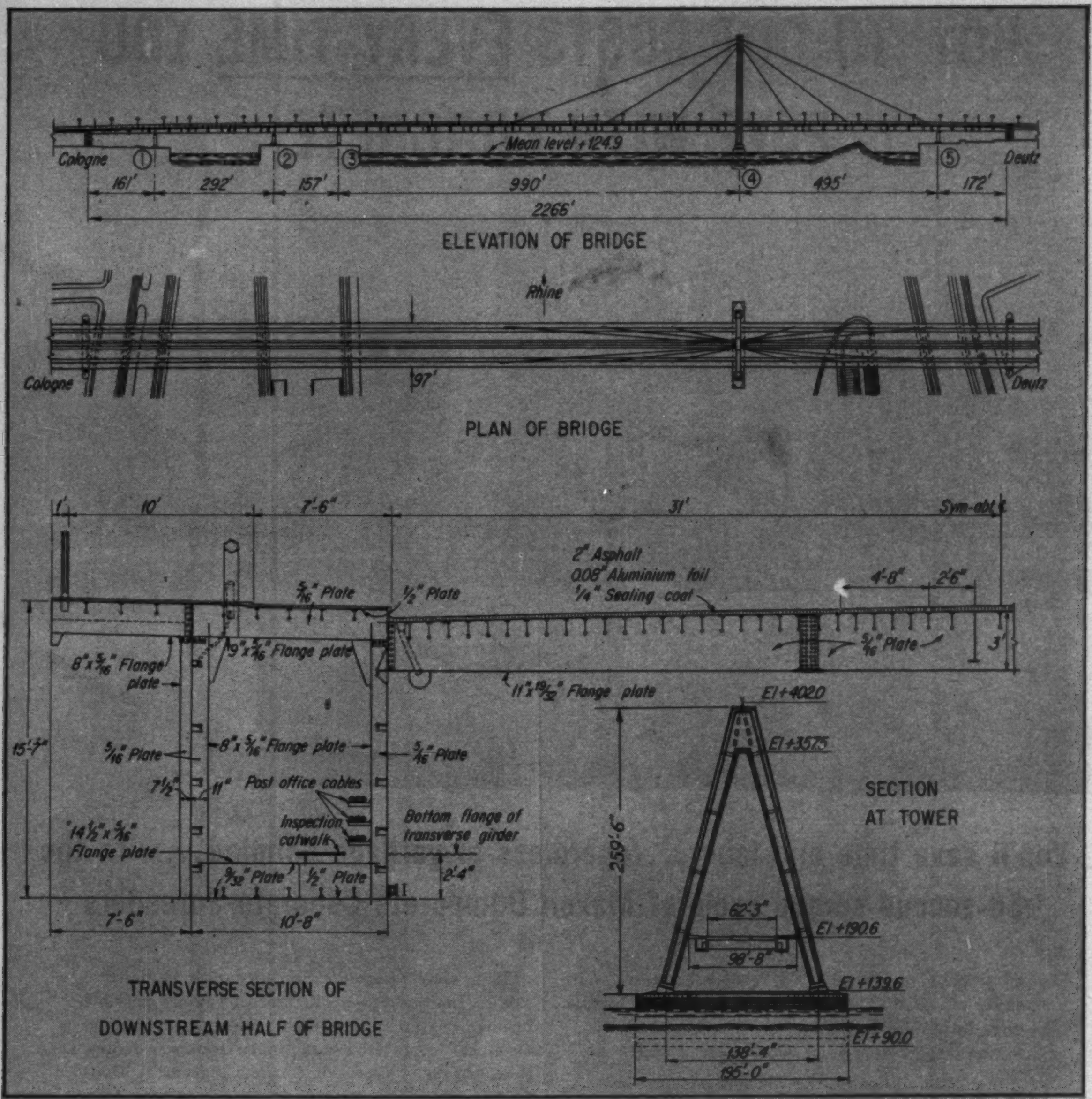
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161'
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990'
495'
172'
2266'
ELEVATION OF BRIDGE
Rhine
Cologne
97'
Deutz
PLAN OF BRIDGE
1'
10'
7'-6"
31'
Sym-abt ℄
2" Asphalt
0.08" Aluminium foil
1/4" Sealing coat
4'-8"
2'-6"
5/16" Plate
1/2" Plate
9"x5/16" Flange plate
8"x5/16" Flange plate
5/16" Plate
3'
11"x19/32" Flange plate
15'-7"
5/16" Plate
8"x5/16" Flange plate
5/16" Plate
7 1/2"
11"
Post office cables
Inspection catwalk
Bottom flange of transverse girder
14 1/2"x5/16" Flange plate
9/32" Plate
1/2" Plate
2'-4"
7'-6"
10'-8"
TRANSVERSE SECTION OF DOWNSTREAM HALF OF BRIDGE
El+402.0
El+357.5
SECTION AT TOWER
259'-6"
62'-3"
El+190.6
98'-8"
El+139.6
El+90.0
138'-4"
195'-0"

**Elevation, plan and cross sections indicate complexity of the bridge's design.**

tower was inclined nearly 12 in. toward Cologne.

With the weight of the superstructure supported by the lower and center cables, the next step was to dismantle the temporary structure at the river end of the bridge. The contractor then reassembled the falsework again in midstream, some 340 ft from its original position. This method allowed construction of the bridge to proceed without hindering river traffic.

The contractor then advanced the span toward the closure point to slightly beyond the temporary support. Workmen installed temporary frames to support the top suspenders at several points along their length and jacked up the cantilever end of the structure almost 13 ft from the horizontal. By this method, a pull of only about 10 tons was sufficient to lift the center sections of the suspenders and drop them onto their saddles. After the cables were installed, workmen lowered the jacks.

**Final major step in construction of the superstructure was the placing of the closing section.** Before the final section could be placed, the long cantilever extending from the tower toward the left bank had to be raised a little over 3 ft, while the end of the cantilever from the left bank was raised about the same distance. Workmen raised the left-bank cantilever with jacks mounted on falsework near pier 3. The closing section was then lowered into place and construction of the superstructure was completed.

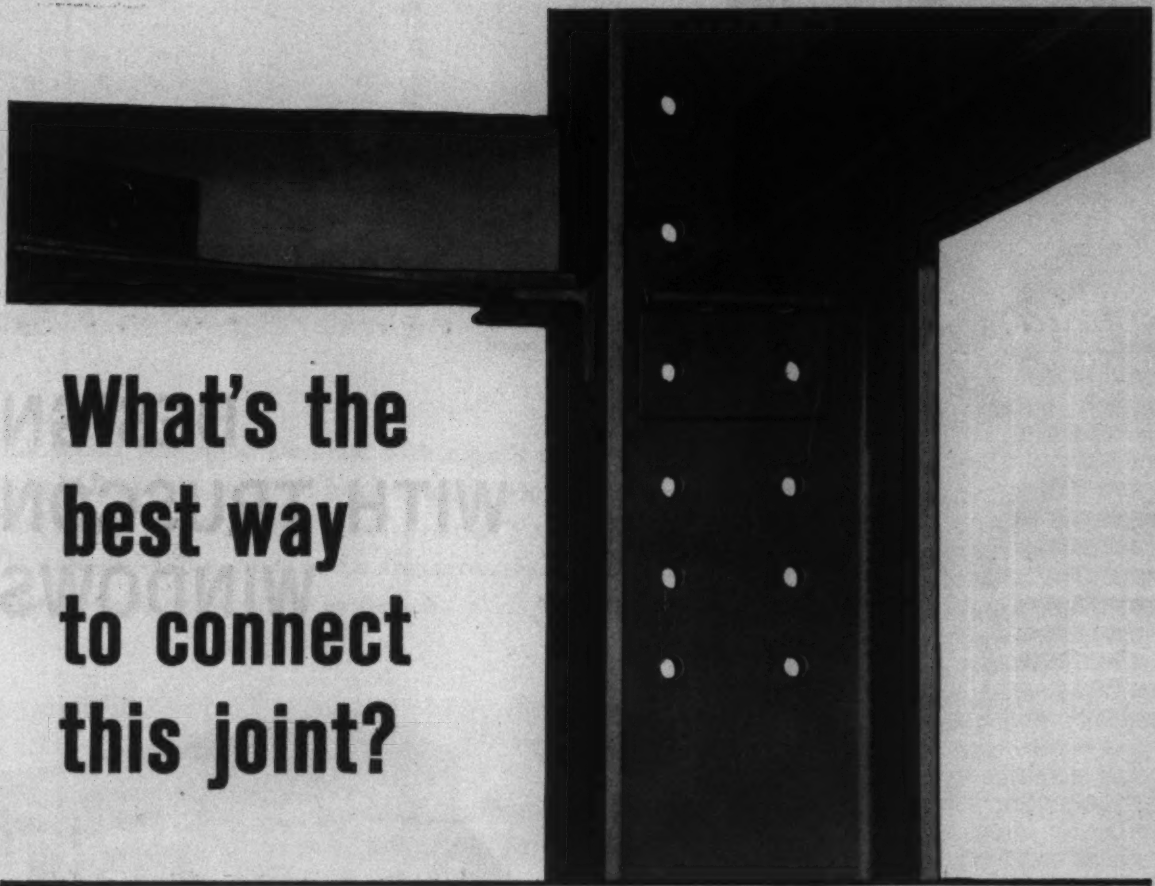
The bridge deck is about 97 ft wide. It accommodates a 20-ft-wide trolley-car road, two 22-ft roadways, two 7-ft bicycle paths and two 9.5-ft pedestrian walkways.

Bridge approaches are continuous prestressed concrete girder construction on reinforced concrete piers.

Cost was slightly more than $6 million.

The bridge was designed by Gerd Lohmer. Planning and engineering responsibility were carried out by Gutehoffnungshuette Sterkrade, A. G. Steel erection was by the Gutehoffnungshuette A. G., Rheinstahl Brueckenbau A. G., Stahlbau Humbolt, Stahlbau Albert Liesegang, and Schwarze Soehne. Resident engineer for the city of Cologne was Franz Barhn, with Karl Schuessler as general superintendent.

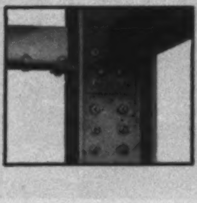
# What's the best way to connect this joint?



## Rivets? Bearing Bolts? High Strength Bolts?

**If you use rivets,** you need a skilled crew of 4 men, have to pull the iron together with fitting up bolts, get unpredictable clamping force from the cooled rivets with no assurance that each has completely filled the hole. Strength of joint would be shear strength of the rivets, and net section of the steel.

**If you use bearing bolts,** you can do the job faster with a two man crew, and get known clamping force from torquing the nuts. But hole size and alignment become critical, with reaming required. Grip length is also critical, making these bolts less versatile. For the longer bolts, assembly costs go up because of increased driving effort. And fitting up bolts must still be installed—and removed.



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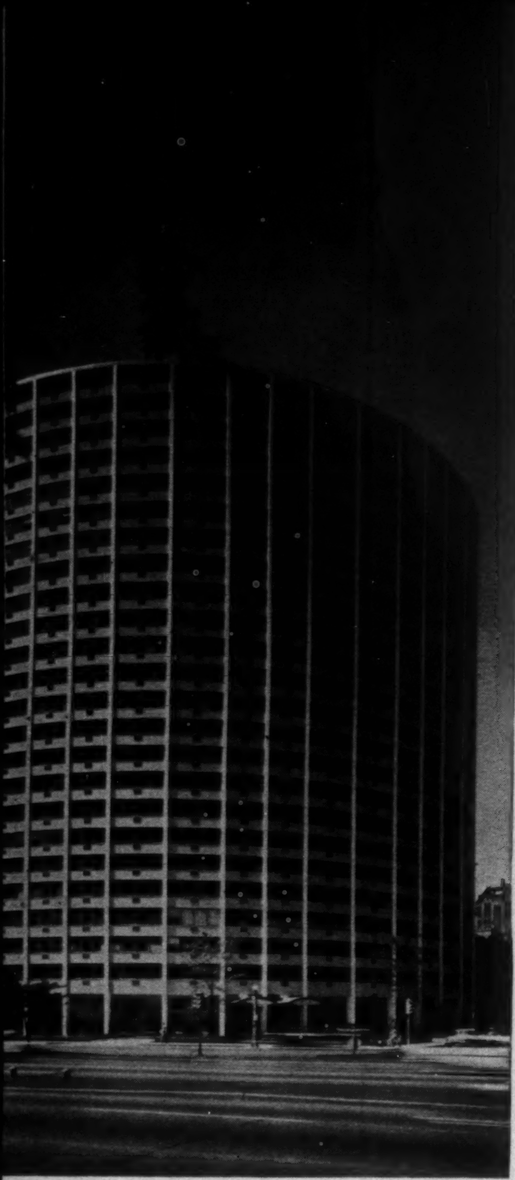
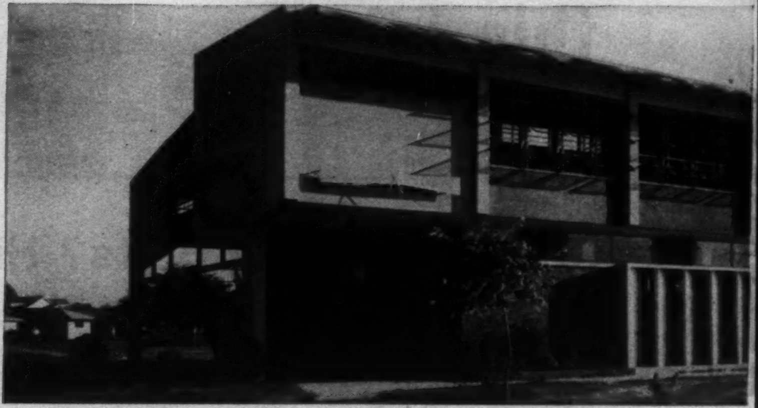
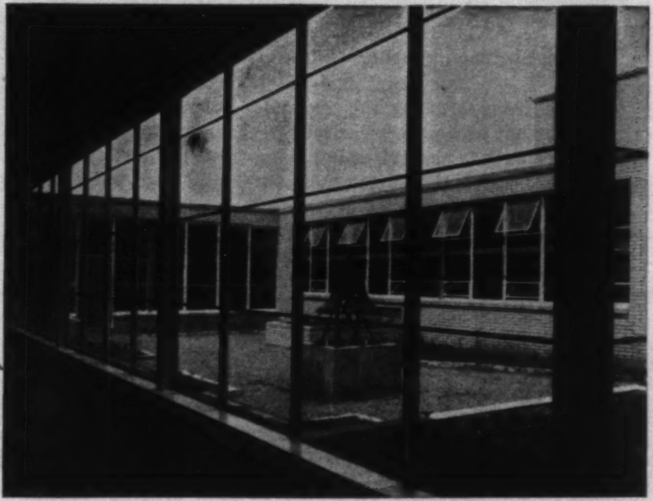


# DESIGN WITH TRUSCON WINDOWS





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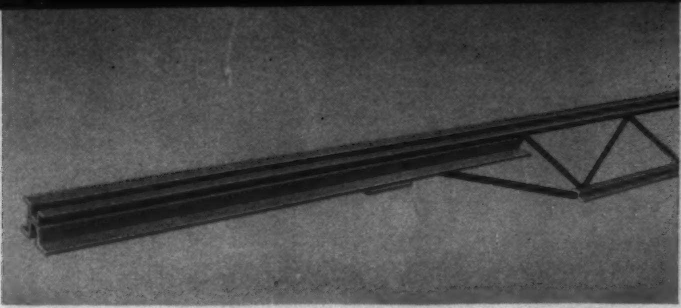

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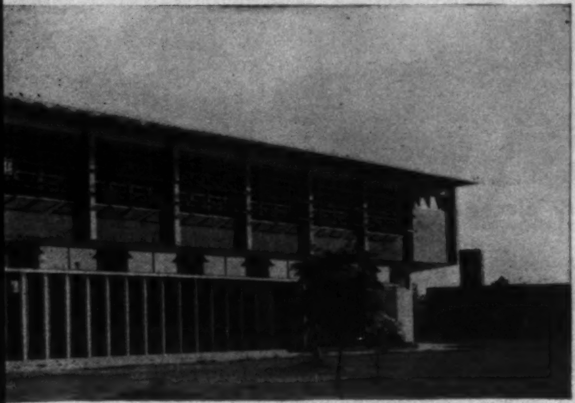

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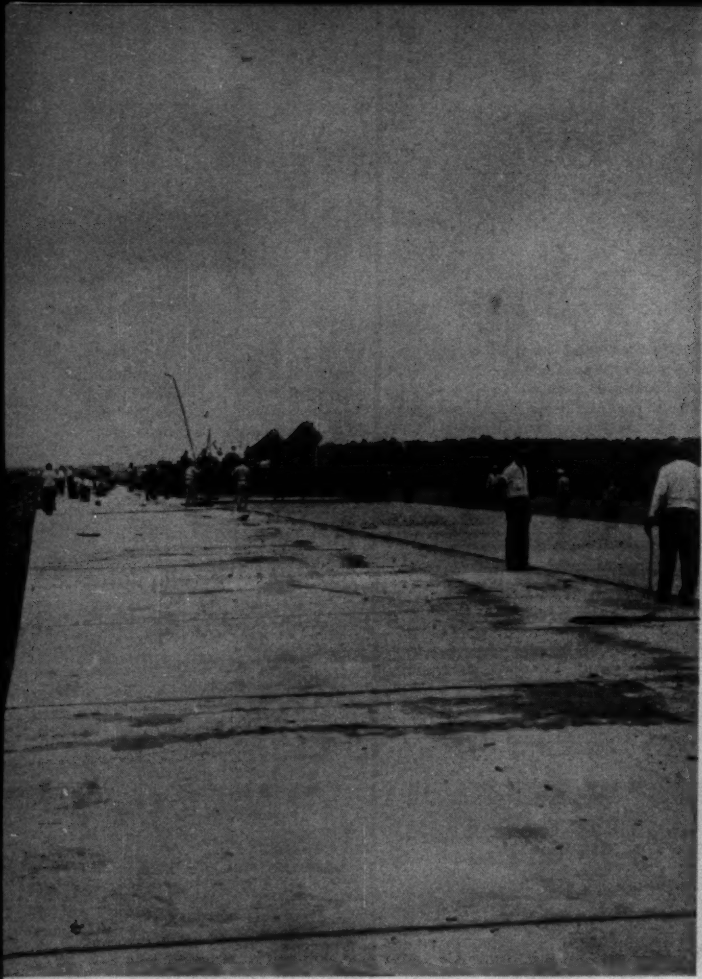
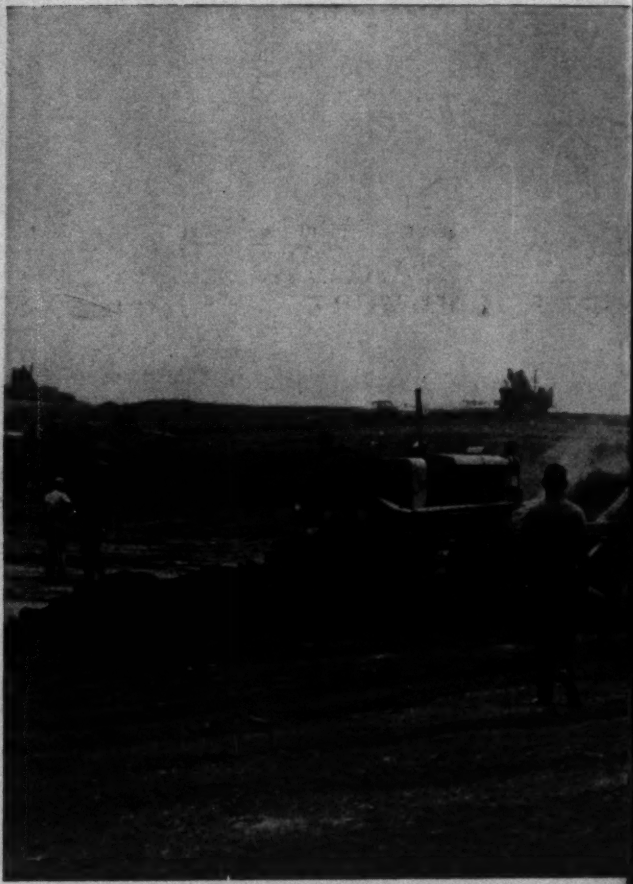


**Two runways are more than two miles long.**

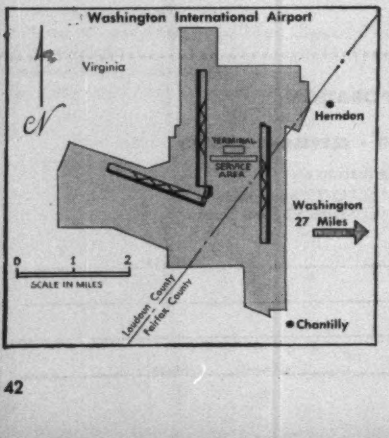


**Ninety pieces of earthmoving equipment moved**

# Everyone Thinks Big at Dulles

Everything about Dulles International Airport, the jet airfield under construction 27 miles west of Washington, D. C., is big.

Runways two miles long seem to reach out to the horizon. One of the largest concrete plants in the country gushes as much as 10 cu yd of mix per minute to supply paving crews that have placed more than 5,400 cu yd in a shift.



A fleet of high-capacity earthmoving equipment gouged 11 million cu yd of red clay and shale from the rolling farmland near Chantilly, Va. The contractor has worked two 10-hour shifts a day on what will be the world's first commercial airport planned from the start for jet traffic.

Even the owner is big. The Federal Aviation Agency is building Dulles International Airport for the U. S. Government. The $85-million airport will develop large-scale international traffic in and out of Washington and take pressure off the already crowded Washington National Airport.

Completion is scheduled for mid-1961.

The site is huge, 9,600 acres in Fairfax and Loudoun Counties. Construction on this 15-sq-mi tract is so spread out that the project manager uses a short-wave radio network as an aid in directing operations.

This is the same general area in which the Union and Confederate armies fought the inconclusive Battle of Chantilly. In 1862, on the eve of the Second Battle of Bull Run the two forces fought all day. By nightfall 1,500 men were dead and neither side had gained a foot of ground permanently.

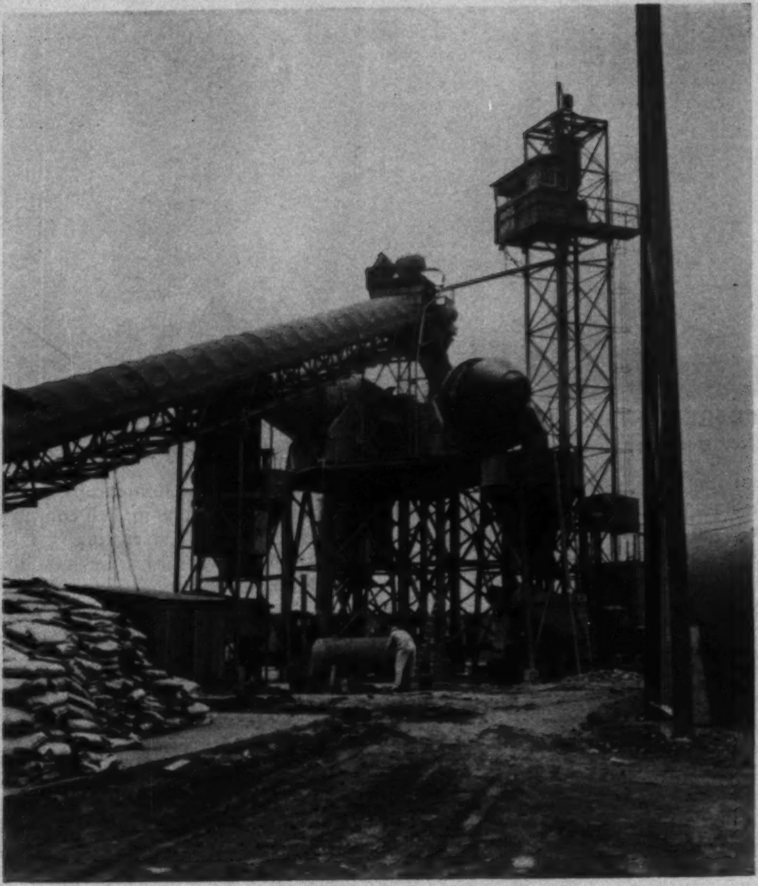
The builders of Dulles International Airport (it was originally named Washington International Airport and known as (Chantilly) have gained a lot of ground since they began battling with the site in October, 1958.

A single contractor, C. J. Langenfelder & Son, Inc., of Baltimore, has done all of the major work so far on three contracts with a total value of $19 million. For each contract the company underbid at least 11 other contractors.

Langenfelder cleared the site, graded it, handled drainage and, by the close of the construction season last fall, paved two long runways and their taxiways and started work on the third.

The completed runways are two north-south parallel strips that have a 50% overlap in their length. They are built 6,700 ft apart. Both are 11,500 ft long and 150 ft wide. Langenfelder will

11 million cu yd of material.



A concrete plant produces more than 500 cu yd per hour.

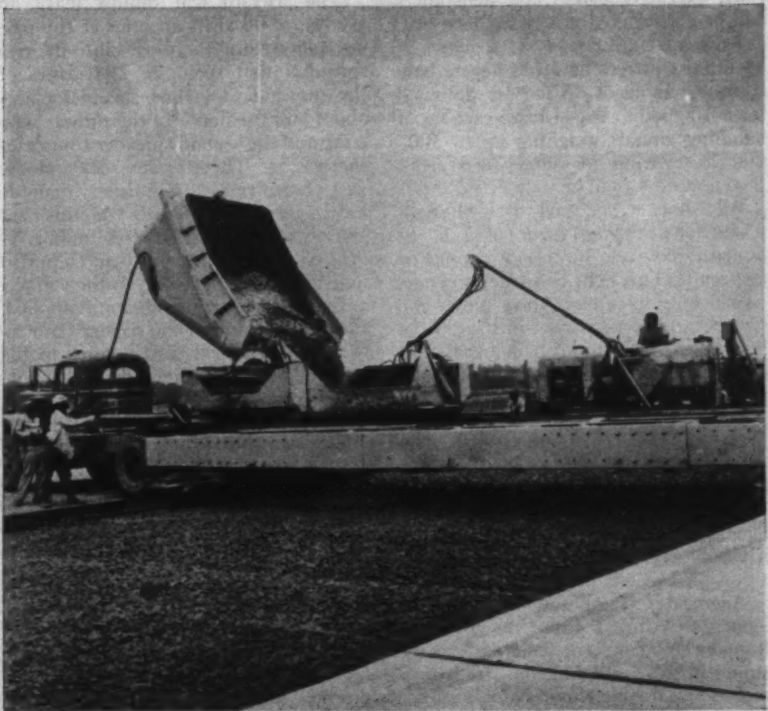
# Airport

resume work in the spring on the third runway, which will run west northwest-east southeast and join the western north-south runway at a common holding pad (see map). This strip will be only 10,000 ft long.

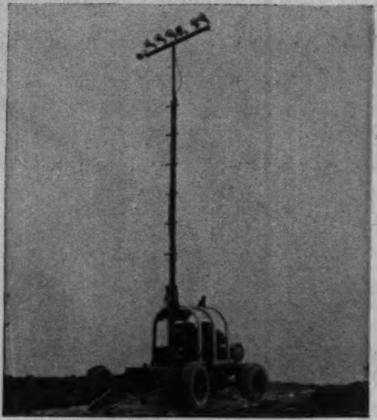
A 75-ft-wide taxiway will run parallel to each runway. Three 75-ft-wide high-speed turnoffs, built at about 30 deg angles to the runways, will connect the runways with the taxiways. Built with wide-radius turns and entrances more than 1,000 ft long, these turnoffs are designed to permit incoming planes to leave the runway at speeds up to 60 mph.

The planes will need only 6,000 ft of runway to land on and the turnoffs will take them off the runway as soon as they slow down to 60 mph. The design is supposed to allow any size of airplane landing at whatever speed to leave the runway 30 seconds after it touches down. The idea is to keep the landing area as free as possible.

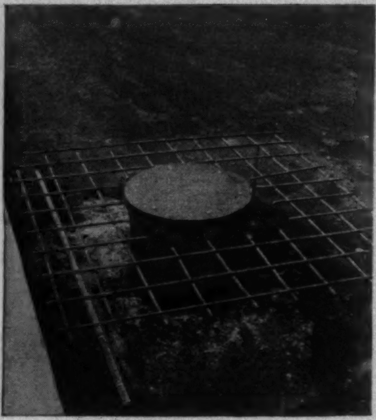
The design for Dulles calls for a servicing area south of the terminal



Pavers placed as much as 5,435 cu yd of concrete in a shift.



**MOBILE LIGHTS** on wheels and skids enabled grading crews to work at night.



**GRID REINFORCEMENT** protects runway lights installed in the pavement.

building (see p. 24), between the two north-south runways. Once off the runway, an arriving airliner will head for an assigned service position not far from where it touched down. Taxiing time will be kept to a minimum. On arrival at the service station the plane will hook up with mobile lounges that will remove passengers. Ground crews at the station will begin servicing the craft. In a short time a jet plane can be returned to the air.

Immediate plans call for construction of a row of servicing stations that will accommodate 30 airliners. Ultimately, 100 positions will go up in three parallel rows in front of the terminal building. Six positions for smaller feeder-line aircraft, executive planes and helicopters will be constructed nearer the terminal.

Runways and taxiways are made of 15 in. of concrete on an aggregate base course 9 in. thick. They are designed for a 100,000-lb wheel load, capable of handling aircraft weighing up to 500,000 lb. Paving for noncritical areas, such as aprons, will be only 12 in. thick.

All runways and taxiways will have 25-ft-wide shoulders made of 2 in. of asphaltic concrete on 4½ in of crushed aggregate. This light construction is designed only to support snow plows and sweepers. The runways will have to be swept frequently to keep them clear of any debris that might be inhaled by the powerful jet engines.

Langenfelder's $12.5-million paving contract calls for placement of 481,000 cu yd of portland cement concrete over a 1,650,000-sq-yd area. This huge appetite for material is served by an equally impressive concrete plant, a batching and mixing installation with a possible capacity of 600 cu yd an hour.

Aggregates, sand and two sizes of stone, are carried from stockpiles to hoppers by conveyor belts. Cement, stored in two 7,500-bbl silos, feeds into a 600-bbl double cone batching silo. The plant weighs out and blends the components semi-automatically as it dumps them onto a 60-in. belt conveyor that takes them to the mixers.

Three 10-cu yd mixers are mounted on 30-ft-high steel framework near the batch plant. Each mixer works on a three-minute cycle. As two mixers rotate horizontally during their cycle, water and batch is fed into the third.

When a mixer completes its cycle, it tilts 45 deg downward to discharge into its own 20-cu yd holding hopper. A fleet of 25 trucks with 6-cu-yd bodies carries the mix to the paving train. The plant is located between the two parallel runways. No round-trip haul has been longer than four miles and the average is three.

The six-yard rear dumps make an average of 90 visits an hour at the paving train to drop their loads into the two spreaders that span the 25-ft lanes of the runways. The first spreader places about half the depth of the runway concrete and the second spreader completes the paving. The rear spreader and the first of two transverse finishers that follow it are equipped with vibrators that consolidate the concrete. A trailing V-float gives a machine finish and a burlap drag gives the final finish to the surface.

Before a curing membrane is applied, the last machine in the paving train inserts wedge-shaped plastic strips in the freshly placed concrete to make contraction joints.

These strips, ⅜ in. wide at the top and tapering to ⅛ in. in a 3-in. depth, are held in steel jaws. Through a combination of force and vibration, the strips are forced into the concrete. Two 12½-ft strips are inserted end to end across the 25-ft lanes. When the concrete is set, workmen pull the strips out easily for reuse. The joints are then filled with asphaltic sealer.

Inspectors examine the set concrete for variations of more than ⅛ in. up or down within any 10 ft. Anything beyond this has to be built up or planed.

There is no reinforcing in the runway paving, except for steel load transfer joints and grid reinforcement around the cans that will house flush lights.

Langenfelder will install more than 3,000 lighting bases in the Dulles runways. These will be for high intensity runway edge lights, runway centerline lights, taxiway lights and the centerline lights up the middle of the high-speed turnoffs. Not all of the lights will be installed immediately. By making provision for them early, FAA will be saved the heavy expense of pavement cutting and jacking ducts under pavement.

The light cans, 17½-in.-high cylinders attached to 2-in. conduits, are difficult to put in place. They are implanted in the base course and must be kept in place while the paving train passes over. Screeds often knock them over. The paving operation buries them ⅜ in. below the surface, their tops covered by circles of plywood.

Grading of the site, like most of the other operations, was distinguished not by the techniques used, but by the immensity of the job. The contractor used more than 90 major pieces of equipment to move 11 million cu yd of earth. Portable light plants mounted on wheels permitted grading work at night.

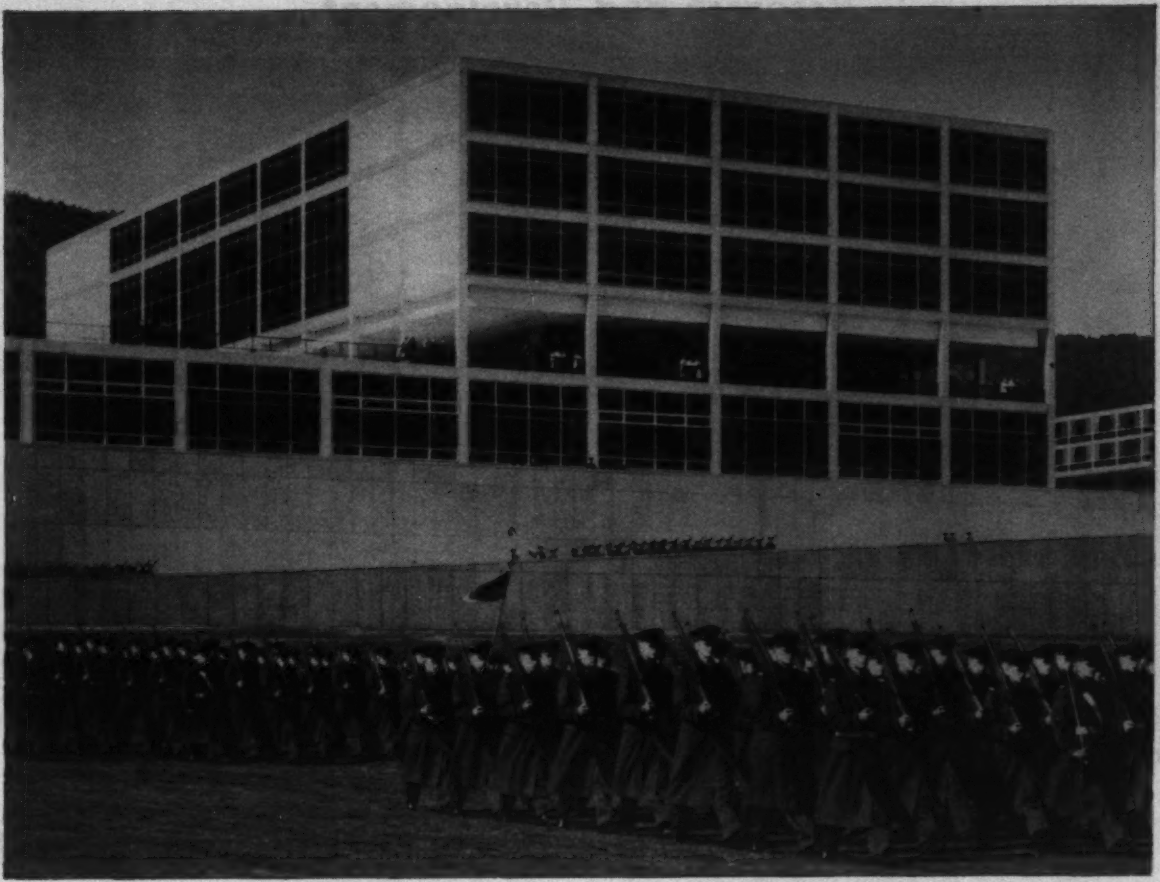
Material at the site ranges from loose loam at the surface through sticky red clay and decomposed shale to tough shale about 5 ft down. About 50% of the shale could be ripped out by bulldozers in 6-in. layers. The rest had to be blasted, including all drainage ditches. But the shale made good fill after rollers broke it down.

Fills seldom were more than 30 ft. deep and the highest cut was 10 ft. Fill was put down in 8-in. layers and compacted to about 6 in. The consultants soil section tested compaction.

Ammann & Whitney, New York City, is prime consultant for Dulles International Airport. Associated with it are Eero Saarinen & Associates, Bloomfield Hills, Mich.; architects; Burns & McDonnell, Kansas City, Mo., electrical and mechanical engineers; Landrum & Brown, Cincinnati, economic consultants; and Ellery Husted, Washington, D. C., master planning advisor.

The designers have planned the airport in such a way that it can be expanded to accommodate increasing air travel in and out of Washington. A runway parallel to the 10,000-ft runway is scheduled. The terminal building will be expandable. The number of passengers using the airport is expected to reach 4 million in 1965, 6.6 million in 1970 and 9 million in 1975.

Work to be continued or started in 1960 will include the third runway, the terminal building, and 800 x 4,000-ft parking apron, the utilities system and at $42.5-million road to Washington.



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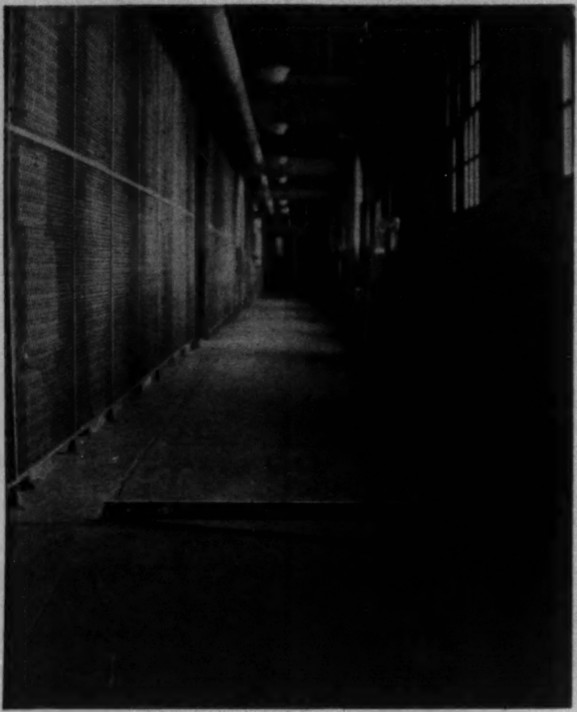
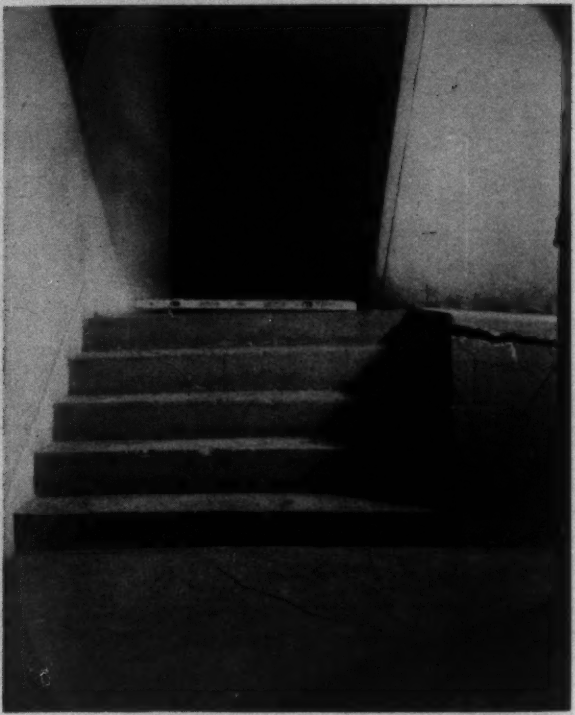


**In Cleveland, floors are heaved and . . .**



**Stairways ripped apart when . . .**

# Structures Don't Settle in This

In many places, engineers and contractors have to worry about unfavorable soil permitting a structure to settle. However, in several sections of the Midwest people in construction are—or should be—concerned with having structures raised by subsurface materials.

This is particularly true in a belt running eastward from Cleveland along the shores of Lake Erie.

The culprit in this unusual condition is iron pyrites—$FeS_2$—a yellowish mineral with a metallic glint that long ago earned it the name of "fool's gold." It is generally regarded as stable and only slightly reactive under normal conditions. However, when exposed to dampness for a long period, the pyrite oxidizes and its crystals expand to as much as ten times their unoxidized size.

Under most conditions the expansion of pyrites would be of little concern to a contractor or a builder. But when the material is imbedded in the surface of shale immediately beneath a concrete slab, the problem becomes acute. The rock beneath won't give to permit the expansion—a slab above will.

In the Ohio area, the amount of pyrites in shale reaches as much as 4.5% by weight. Pyrite particles vary in size from microscopic to nuggets ¼ in. in diameter. In Cleveland, several sewers have been disrupted and many of the city's large buildings—including some at Case Institute of Technology and Western Reserve University—have irregular floors, stairways, and walls.

Latest casualty is a recently started, $1.5-million suburban junior high school. With the finished basement floor yet to be placed, the rough floor has been raised in amounts varying up to ⅝ in. Construction has been halted and a firm of consultants has been retained to look into the matter.

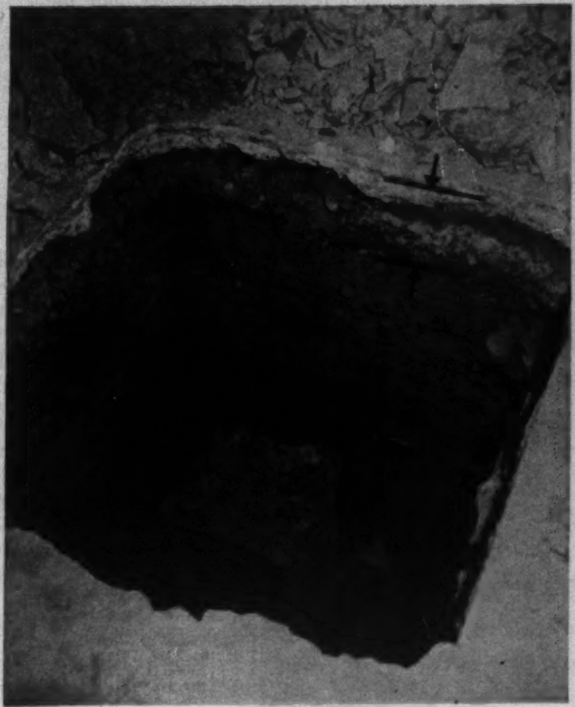
No one can say for sure when—if ever—the heaving will cease of its own accord. It is generally believed that the oxidizing process will be increasingly slowed and eventually stopped completely as the oxidized layer thickens enough to first restrict, and then eliminate, the supply of air and water. However, several nearby structures, built 25 to 40 years ago, are still having trouble.

Pyrite oxidation has plagued a General Electric plant at Nela Park on Cleveland's east side. The plant is on an 85-acre tract of land and comprises 22 buildings from one to three stories in height. Its construction was started in 1910 and is continuing.

Buildings are founded on blue shale, and they have been a source of trouble to the owner since the early 1920s. Several sections of basement floor have been removed and replaced after being raised as much as one foot. Three-story walls and stairways have been cracked—some appreciably. In one instance, lightly loaded columns were raised 4 in. by the oxidation process.

Here's the reason: The shale is a fissile rock formed by the consolidation of clay. Pure clay is composed mainly of kaolinite, a hydrous aluminum silicate, but most clays contain other minerals and some organic matter. These materials become an integral part of shale when it is formed.

A chemical analysis made in 1935 under the direction of General Electric engineers indicated that the shale at Nela Park contains ten minerals other than silica and alumina. Iron oxides represent almost 10% of the total and all but one of the remaining minerals are in their oxidized form. One of the minerals is iron pyrites, a disulfide of iron. This material was immediately



. . . Oxidizing pyrites split shale (arrow).

Bituminous spray prevents oxidation.

# Shale; but Watch Out for Heave

suspected as the troublemaker because of its tremendous crystaline growth during oxidation. One formula for this reaction is:

$2\,FeS_2 + 7\,O_2 + 2\,H_2O = 2\,FeSO_4 + 2\,H_2SO_4$.

To substantiate the oxidation theory, shale samples were placed in glass jars, and the jars were sealed. Subsequent analysis of the air in the jars showed the oxygen content to have dropped from a normal 20.7% to as low as 12%, while carbon dioxide increased from a normal .03% to more than 1%.

It was decided therefore that the pyrite was oxidizing and expanding, and that in doing so it was splitting the shale. Public announcement of the findings was made in May of 1935 by Wilbur Stout, Ohio State Geologist.

Much credit for the studies and for the conclusions must be given to E. J. Edwards, manager of G. E.'s Large Lamp Department until his retirement in 1947, and to his assistant, W. E. Streator. Both men spent a great deal of time analyzing the factors on which the oxidation theory is based.

This theory has been confirmed several times since, most recently by David V. Lewin, Cleveland consulting engineer retained to solve the problem at the suburban school. Mr. Lewin subjected a core of shale to a wetting action and a stream of warm air. Within 24 hours cracks about 2 mm wide appeared, not only along the laminations, but also in a plane perpendicular to them. Inspection of the cracks revealed the presence of yellow pyrites within them.

Thus the damage-causing factors are two fold. The oxidized pyrites themselves occupy ten times more space than the unoxidized material. Furthermore, the splitting of the shale causes it to occupy a greater volume.

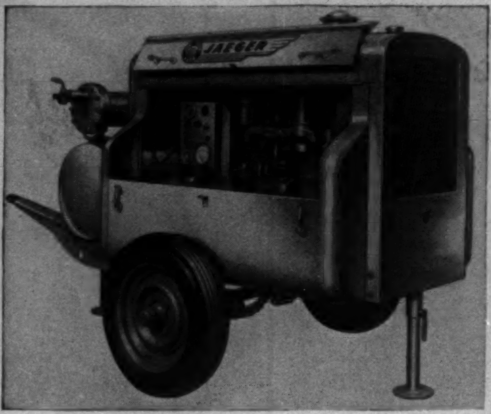
The repetitive nature of the reaction is also obvious. As each succeeding layer of shale is cracked, the layer below is exposed to air. This gives rise to these two unanswered questions: For how long a time will the oxidation continue to affect the overlying structures? Will the oxidation ever reach a point where an overlying mass will be able to compress the broken shale and the pyrites and in so doing return the mass towards its intended position?

No definitive tests have been made to determine the lifting capacity of the pyrites during its oxidation cycle. Mr. Lewin, in connection with his studies of the problem, has made laboratory tests that indicate forces up to 2 lb per sq in. He admits however that his tests are inconclusive and believes that the actual forces under field conditions are much greater. The extent of damages at the General Electric plant appears to sustain this belief.

One thing is certain: the greater the voids in the material overlying the shale, the faster the oxidation, and the greater the expansion. It has been found that sewer pipes laid on a stone base are disrupted faster and to a greater extent than those laid in fine sand.

The solution, therefore, lies in preventing oxidation of the pyrites. The preventative methods suggested originally in 1935 by Geologist Stout, in connection with the investigations of the Plant Engineering and Construction Department of General Electric, have been followed successfully for years by the company, both in the repair of damages at Nela Park, and in new construction where the presence of pyrites is known or suspected.

The procedure used by G. E. is this: The shale is cut 4 in. to 1 ft above



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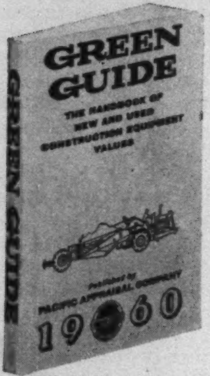
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its final grade. The entire excavated area, including the walls of the cuts, is immediately given a spray or brush coat of bitumen. After all other miscellaneous work is completed, and the structure is ready for concrete, the shale is then cut in sections to the proper sub-grade depth. As each section is exposed it is concreted immediately. According to General Electric's Daniel F. Hahn, the results of this procedure have been very satisfactory.

On other sites, Mr. Lewin has had success with modifications of the same procedure. They go like this: The excavation is held a foot high and the shale left exposed and untreated until every thing is ready for concrete. The shale is then cut to final grade and almost immediately given a spray of mop coat of bitumen to prevent penetration of air or water. In some cases a 2 in. layer of clay or mud is placed instead of the bitumen. In other cases the bitumen is first applied and then covered with clay or mud. In all cases, the results have been very satisfactory.

Mr. Lewin admits that the use of clay beneath a concrete slab is contrary to accepted building practice, but, he adds, "so is a ground condition that lifts concrete."

## Lake Superior Bottom Charted in 3-Yr Survey

A three-year sounding program completed this year by the U. S. Lake Survey has filled in detail on the topography of the bottom of Lake Superior.

Prior to 1956, deep-water areas of the lake had not been sounded in enough detail to give more than a superficial idea of the configuration of the bottom.

Using modern electronic sounding and positioning equipment, Lake Survey personnel sounded the lake's entire deep-water areas.

The western part of the lake was found to have a relatively flat bottom and somewhat uniform depth. Depths in the eastern part were found to vary greatly over short distances, and the bottom was found marked with a network of ridges and valleys.

Valleys are more than 700 ft deep in some places. They range from a half-mile to several miles in width.

The greatest depth recorded was 1,333 ft, placing the lake bottom at that point about 731 ft below sea level. The ridges on either side of the valley at that location are respeotively 565 ft and 793 ft below the lake surface.

Bottom samples taken in and near one of the valleys are being studied by the Geology & Geological Engineering Department, Michigan College of Mining & Technology, Houghton, Mich.

# The Chase Manhattan Bank Building

## A BETHLEHEM STEEL REPORT ON ONE OF THE SIGNIFICANT STRUCTURES OF OUR TIME

BETHLEHEM STEEL

Architect: Skidmore, Owings & Merrill; consulting foundation engineers: Moran, Proctor, Mueser & Rutledge; consulting structural engineers: Weiskopf & Pickworth; consulting mechanical engineers: Jaros, Baum & Bolles; consulting electrical engineers: Meyer, Strong & Jones; general contractor: Turner Construction Company.

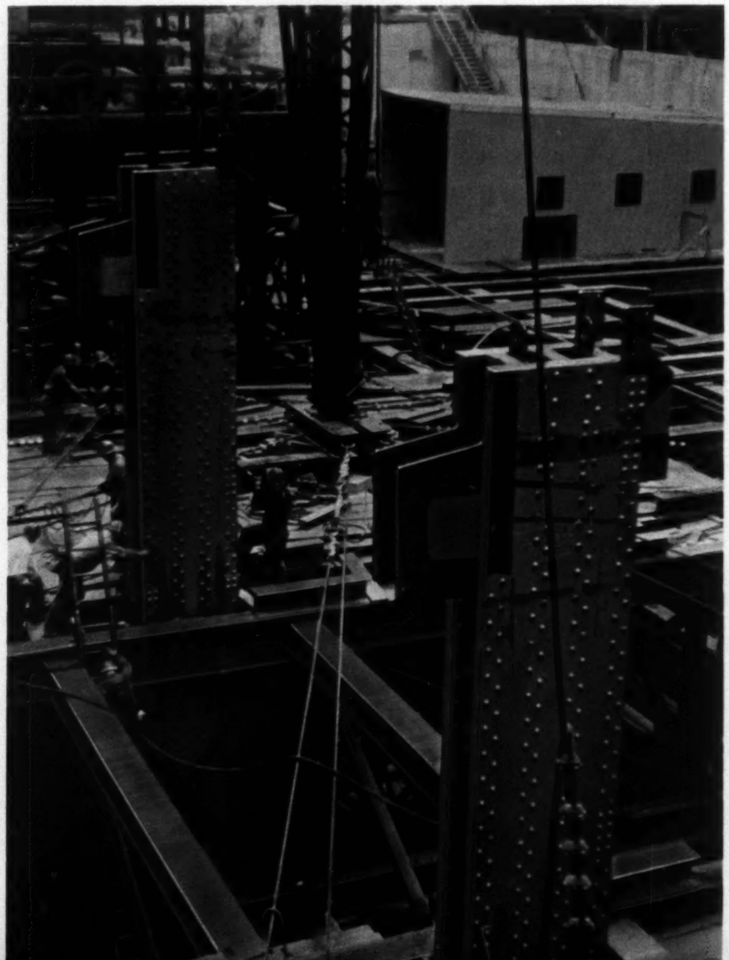
# *"Like a shaft of light..."*

This apt phrase was used by an architectural journal in describing the design of the new headquarters of The Chase Manhattan Bank. Its lofty tower of glass and metal will glow amidst the somber facades of lower Manhattan. And, occupying only about a third of the 2½-acre site, it brings sunlight and air and spaciousness to the dark canyons of Wall Street.

Fifteen thousand employees will occupy the building, which rises sixty stories into the air, and extends five floors below ground level. Gross floor area is more than 2.3 million sq ft. The tower rises 810 ft without setbacks, and is approximately 281 by 107 ft in plan. It required approximately 53,000 tons of structural steel, fabricated and erected by Bethlehem. Nearly 5,000 tons of this total, plus some 1,100 tons of sheet piling, were required for the substructures alone.

**BETHLEHEM STEEL**

*The column sections, up to 36 ft long and up to 52 tons in weight, were fabricated at Bethlehem's Pottstown Works. Made from heavy plate material, the sections' outside dimensions are uniform up the entire 810-ft height of the structure.*



*This project marked the first time that permanent floor steel was used as a horizontal strut system, or crosslot bracing, replacing the usual temporary bracing of cofferdams. The steel was erected downward from grade. As each level was placed and jacked to brace the outer walls, the contractors (The Foundation Co., George M. Brewster & Son., Inc., and Joseph Miele Construction Co., Inc.) excavated to just below another level, allowing more steel to be erected. This process was followed for five subsurface levels, to a depth of 80 ft.*

BETHLEHEM
STEEL

*In addition to fabricated structural steel, Bethlehem products used in the Chase Manhattan Building include high-strength structural bolts, sheet piling, concrete reinforcing bars, and steel pipe. Bethlehem wire rope and strand were used for rigging the guy derricks. In addition, manufacturers used Bethlehem products in fabricating the steel flooring, wall partitions, ductwork, and miscellaneous ironwork.*

*Steel decking, made by a Bethlehem sheet customer, was used throughout the building. It was laid quickly and economically; no need for forms. Electrical raceways provide flexibility for the huge open floor areas. Movable steel wall partitions have been designed by the architects and fabricated for use in this building.*

*An ironworker tightens Bethlehem high-strength structural bolts, used for all field connections. Bolting is faster, quieter, and safer than riveting and makes tighter joints.*

*Some 1,500 tons of Bethlehem electric resistance-weld and continuous butt-weld steel pipe were used for the water lines of the heating and air-conditioning system.*

*The 9,000-ton-capacity air-conditioning system is believed to be the largest ever installed in a commercial office building. The ductwork shown here was made from Bethcon, continuously galvanized steel sheets.*

## Bethlehem Products for Construction

*Structural shapes; a full line of industrial fasteners; concrete reinforcing bars and specialty products; Bethlehem Slabform for poured concrete floors and roofs; wire rope, strand, and elevator cable; open-web joists; steel pipe in all diameters; sheet and H-piling; galvanized steel sheets; hollow drill steel; and a complete range of highway construction products.*

Bethlehem Steel Company, Bethlehem, Pa.
*Export Distributor: Bethlehem Steel Export Corporation*

**BETHLEHEM STEEL**

BETHLEHEM
STEEL

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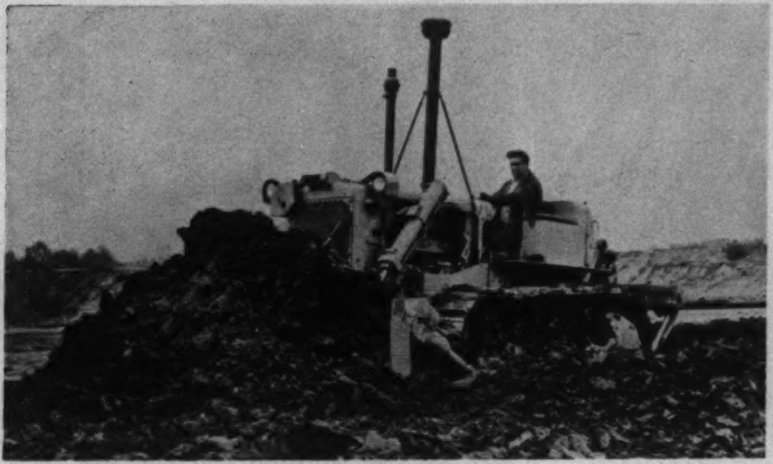


# Improved Cat D6 Ready

The B Series of the Caterpillar D6 Tractor is now available. According to the manufacturer, it contains many important advantages over previous models of the same machine.

A new compact engine is credited with increasing pulling capacity by 25%. It delivers 93 flywheel hp at 1,600 rpm. Standard starting device for the diesel engine is a 15 hp gasoline engine with a recoil starter.

As optional equipment, the manufacturer offers in-seat starting for the gasoline engine, which uses a 12-volt electric system. As an alternate, there is also a 24-volt system to use for direct electric starting of the diesel engine.

So that the machine can carry sufficient fuel for a complete work shift, the fuel tank capacity has been raised from 43 gal on previous models to 65 gallons.

Ease of control and operator comfort have also been considered in the Series B. Levers have been relocated to reduce arm travel, the seat has been moved forward 6 in. for increased visability, foot pedals have been set in natural work positions, gages have been set in a console for easy readability. CATERPILLAR TRACTOR CO., PEORIA, ILL.

# Forming System Saves Bracing

The Gates Cam-Lock System, a recently patented forming method, cuts the normal number of walers and stiffbacks in half, according to the manufacturer. Used with conventional timber formwork, the system comprises five new devices: two types of heavy-duty form ties; a Cam-Lock Tie Bracket; a Stiff-Back Cam; and a Scaffold Bracket.

Cam-Lock Brackets hold walers in place and tighten the wall ties through camming pressure. Stiff-Back Cams connect to ears on the Cam-Lock Bracket to lock 2x4's or 2x6's in place, using the same camming principle. Reports say these brackets also help to align formwork.

The Scaffold Bracket may be attached either to the Cam-Lock Bracket when carpenters are erecting formwork or to the form-tie ends projecting from the concrete after stripping. This facilitates building formwork above and makes the system especially useful in forming high walls. GATES & SONS, INC. 80 SOUTH GALAPAGO ST., DENVER 23, COLORADO.

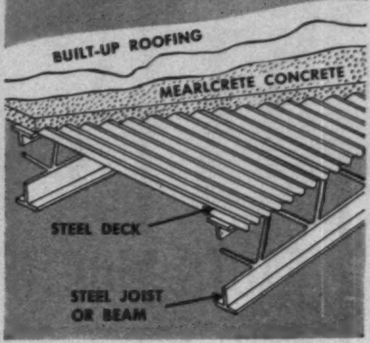
## Scaffold System Fits Inside Spherical Tank

Atlas Industrial Corp. has produced a scaffold for working inside spherical and other irregularly-shaped tanks.

The scaffold consists of a column tube, connected at top and bottom. The horizontal work platform cantilevers off the column tube. It can be raised and lowered manually, electrically or by compressed air. It also rotates about the column axis.

Workmen can telescope the work platform to fit the tank dimensions as the platform moves up or down. Load capacity is 600 lbs at the extreme end. ATLAS INDUSTRIAL CORP., 849 39TH ST., BROOKLYN, N. Y.

MEARLCRETE
*insulating*
ROOF DECKS



*fast*

*Place up to 30,000 square feet of roof deck or insulation in a single day.*

*lightweight*

*Permits savings on structural steel frame!*

*economical*

*Competitive with all other systems!*

Pumped into place as insulating fill on galvanized corrugated steel decks, or as roof decks on form boards, Mearlcrete Foam Concrete offers many advantages over other systems. Here are a few:

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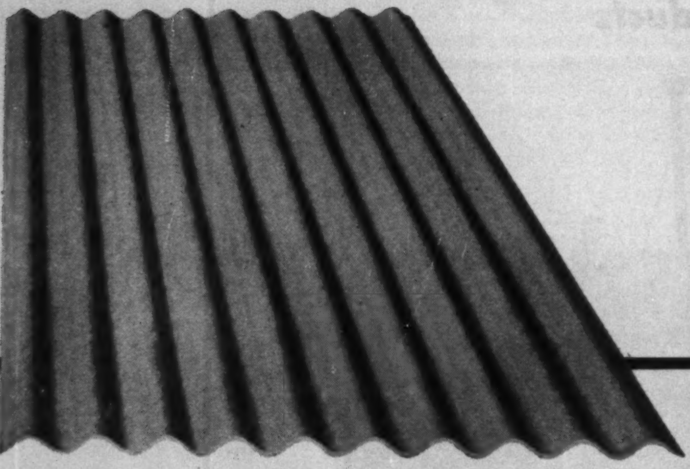

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FOR ROOFS AND SIDEWALLS

**How Ruberoid Corrugated Asbestos is made.** We combine Portland cement and selected asbestos fibres by a special process. The asbestos fibres reinforce the cement. The mixture is then subjected to high pressures during manufacture. The finished product is a dense, rocklike corrugated sheet that provides a permanent cover for practically any type of building.

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**Savings are permanent.** Ruberoid Corrugated Asbestos never needs a preservative coating. Economy of application is backed by practically maintenance-free service during the life of the structure.

**Write for details.** Detailed feature facts and specification data will gladly be supplied. Write The RUBEROID Co., Industrial Products Division, 500 Fifth Avenue, New York 36, New York.

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ASPHALT AND ASBESTOS BUILDING MATERIALS

## Manual Device Cold-Draws Tees in Copper Tubing

The Pipemaster Tee Turner produces a tee in copper tubing in less than five minutes, according to the manufacturer. Suitable for tube sizes ranging from 1¼ in. to 4-in. dia., the device reduces the need for tee fittings and decreases the number of soldered joints at each tee from three to one.

The Tee Turner produces the tee by locking the tube in a clamp, cutting a pilot hole and inserting a forged spinner, which forces the copper wall outward to form the tee.

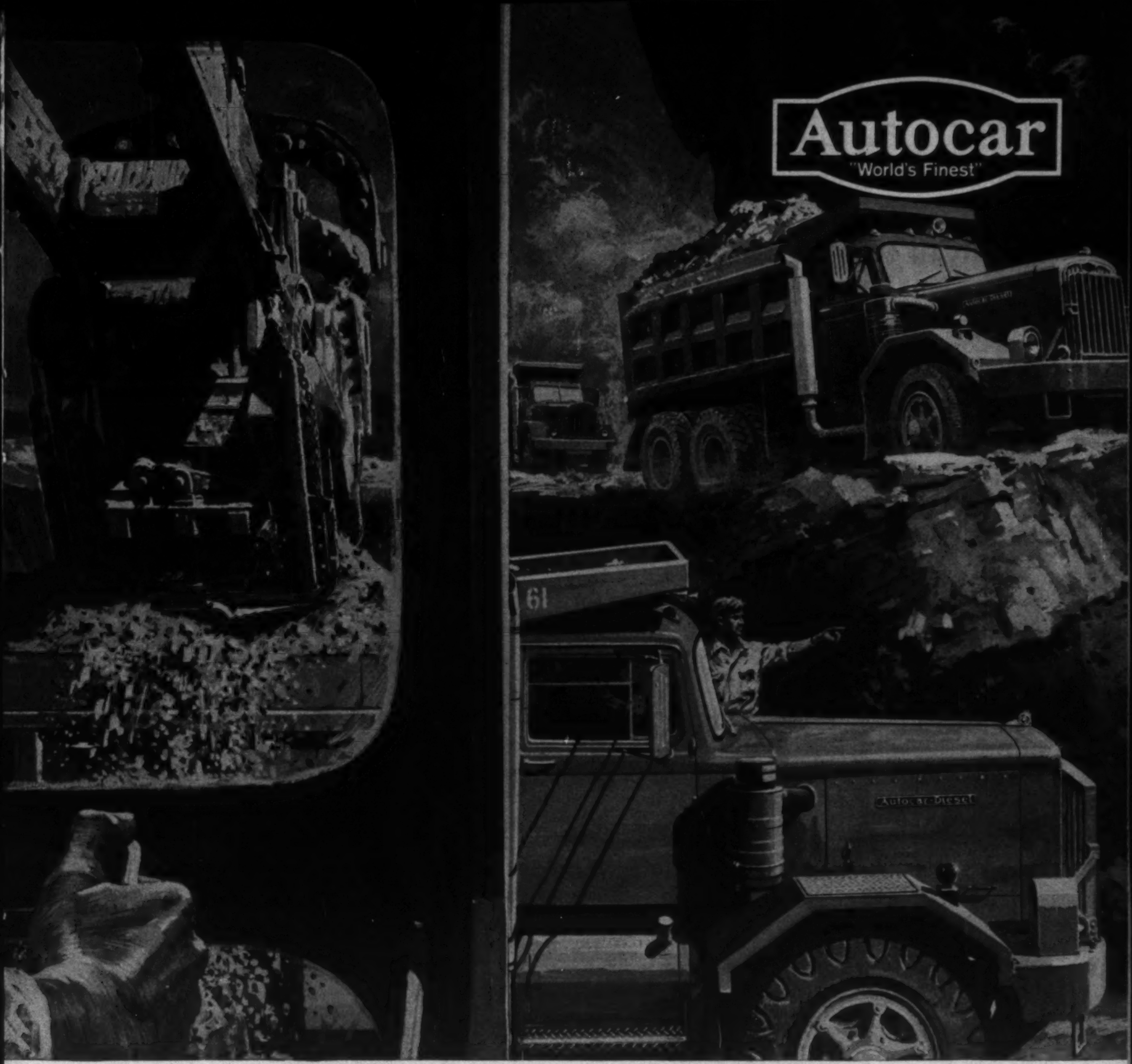
Test reports are available on inquiry. ERIE TOOL WORKS, 735 WEST 12TH ST., ERIE, PA.

## Briefs . . .

- **Towercranes**—Ranging in height from 40 ft to 293 ft, with load capacities to 24,000 lb, towercranes travel on wide-gage tracks and are electrically operated. They can boom out over buildings for spot placement. UNIVERSAL-LIEBHERR, INC., ZELIENOPLE, PA.

- **Utility tractor**—The Model 65 Utility is a 54.5 hp unit designed to handle all types of industrial and construction jobs with a variety of power attachments. It has six speeds forward and two reverse. MASSEY-FERGUSON INDUSTRIAL DIVISION, BLOCK 1000 SOUTH WEST ST., WICHITA 13, KAN.

- **Dump control kit**—A kit designed to permit cab operation of dump truck tailgate locks, the 12R-11 includes a four-way hand-operated cab valve, a 2.5-in. air cylinder with a 6-in. stroke, four hose assemblies of various sizes and fittings and anchor couplings. VELVAC, INC., 3530 W. PIERCE ST., MILWAUKEE 15, WIS.



**Job for Autocars**—A truck is a production tool, and tools must match the job—like the Autocar ten-wheelers shown at work here.

# Peak production calls for Autocar ..."nothing less"

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# Men and Jobs

Ex-highway commissioners Plummer and Haas form . . .

## Consultant Firm Called 'a First'

A consulting firm devoted exclusively to "highway administration and management," has been formed by Harold L. Plummer and William L. Haas, former members of the Wisconsin State Highway Commission.

The new organization, Highway Management Associates, is located in Madison, Wis., and is called by its founders the first of its kind in the nation. Consulting services are to be provided in the fields of organization, personnel, public relations, state-local relations, systems and controls manpower utilization, operations analysis, and management appraisals.

Mr. Plummer, retired chairman of the Wisconsin Highway Commission, joined the State in 1952. He is also vice president of the American Road Builders Association and chairman of the public information committee for the American Association of State Highway Officials.

Mr. Haas who resigned last December as director of administration for Wisconsin highways came to the State in 1953 to help in reorganizing the Wisconsin Commission. Before that he was with the Bureau of Public Roads where he was chief of administrative research.

## PG&E Makes J. F. Bonner a VP

John F. Bonner is the newly elected vice president in charge of engineering for the Pacific Gas Electric Co., San Francisco. He succeeds Walter Dreyer who is retiring.

Mr. Bonner, a civil engineer, joined PG&E as an assistant hydrographer in 1937 immediately after graduation from the University of California. In 23 years with the company, he has been associated with hydroelectric projects in northern and central California.

Mr. Dreyer, a specialist on the integration of steam and hydroelectric power, has been involved in the building of many hydroelectric plants in the Sierra Nevada mountains and large steam-electric plants along the West Coast.

## National Research Council Appoints Augustus Kinzel

Augustus B. Kinzel, new president of Engineers Joint Council, has been appointed chairman of engineering and industrial research for the National Research Council. He will direct the division's research activities in highway construction and traffic engineering, building construction, maritime research and the development of new materials.

A native of New York City, Mr. Kinzel is vice president for research of Union Carbide Corp. He has been with Union Carbide for 34 years. Mr. Kinzel graduated from Columbia University in 1916 and received his B. S. degree from MIT in 1921. He has also received a Doctor of Science degree from the University of Nancy in France.

Mr. Kinzel is a member of the Naval Research Advisory Committee and the Defense Science Board. He is also a past president of the American Institute of Mining, Metallurgical and Petroleum Engineers.

## Noah E. Hull Slated For NSPE Presidency

Noah E. Hull is the official nominee for the presidency of the National Society of Professional Engineers. He has been serving as vice president for the southwestern region.

Mr. Hull, a 1917 graduate of Purdue University, is vice president and general manager of the Hughes Gun Co. He is also assistant to the vice president, manufacturing, of Hughes Tool Co.

Six regional vice presidents and a treasurer have also been nominated to take office in July 1960. They are: W. Earl Christian, New Brunswick, N. J.; R. King Rouse, Greenville, S. C.; Benjamin G. Elliott, Madison, Wis.; Brandon H. Backlund, Omaha, Neb.; Thomas T. Mann, Roswell, N. Mex.; and John H. Stufflebean, Tucson, Ariz.

Russell B. Allen, Silver Spring, Md. has been nominated treasurer.

### Business

**William E. Wood** and **Frederic H. Kock,** Cincinnati architects, have formed a partnership. Mr. Kock has been with Kruckemeyer and Stron for the past 25 years and is also on the faculty of the Evening Applied Arts School in Cincinnati. Mr. Wood, an instructor at the University of Cincinnati Evening College, has been with the firm of Tietig and Lee.

**William R. Gianelli** leaves the California department of water resources to go into private consulting work. He

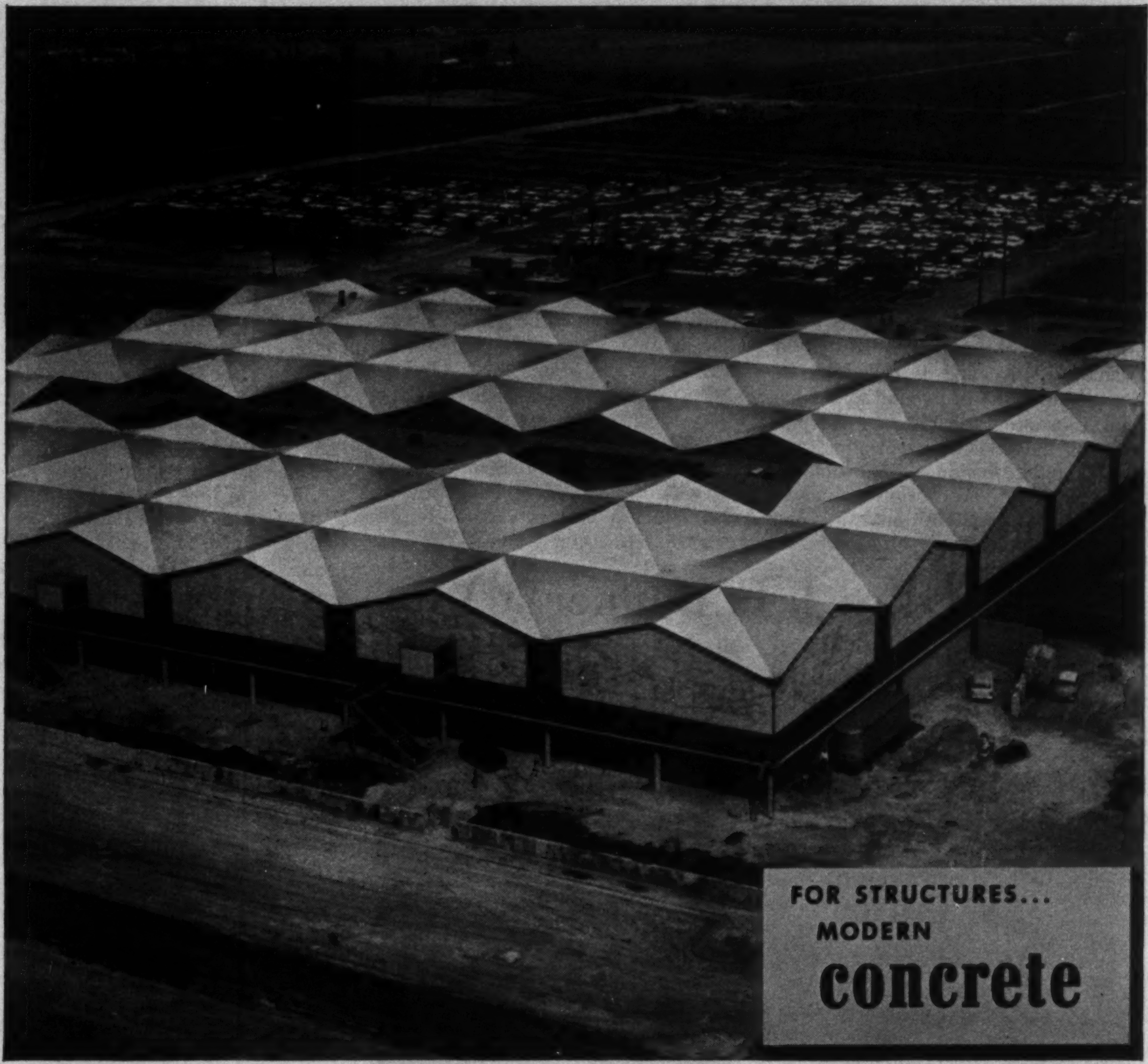
At Texas Instruments' Dallas plant...

**mezzanine "basement" and open floor areas achieved with space frames and shell roof of concrete!**

New ways of using concrete are bringing intriguing design possibilities to architects, with truly practical benefits for their clients. At Texas Instruments, Inc., Dallas, Texas, a trussing technique, using precast concrete V-tetrapods, made it possible to place some 36 special utilities in a walk-through mezzanine between floors. And concrete hyperbolic paraboloids not only created an interesting roof line, but allowed flexibility for assembly line or plant expansion by providing great expanses of unobstructed floor space.

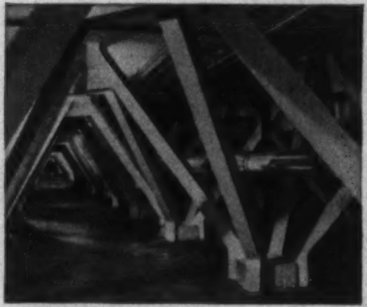
*Architects: Richard S. Colley, Corpus Christi, Texas, O'Neil Ford, San Antonio, Texas. Associates: A. B. Swank, Dallas, Texas, S. B. Zisman, San Antonio, Texas.*

**PORTLAND CEMENT ASSOCIATION** *A national organization to improve and extend the uses of concrete*



## Hyperbolic paraboloid roof gives 63-ft. wide, unobstructed bays

**The roof of the Texas Instruments plant consists of many units, each made up of four similar quadrants cast to form horizontal ridges at the top. Corners of each unit are supported on separate columns. Each unit is structurally independent. Shells are uniformly 3" thick, except in the vicinity of edges and ridges.**



## Concrete V-tetrapods form space truss between floors

**Four-legged, 5,000 psi precast concrete tetrapods act as diagonals for an 8-ft. deep space frame formed with upper level floor slab and lower level prestressed ceiling slab. The truss formed resists heavy shear forces, retains flexibility of utility arrangement.**

***Consulting engineer on shells: Felix Candela. Consulting engineer, general structure: Wallace Wilkerson.***

**For free literature *on shell construction (distributed only in U.S. and Canada) write to Portland Cement Association, Dept. 2a-17, 33 West Grand Ave., Chicago 10, Illinois.***

has joined the engineering firm of Max Bookman and Robert Edmonston to direct the Sacramento office.

**Raymond W. McCall,** former project manager of the St. Lawrence Seaway project, has been appointed assistant to the consumers operating vice president of Vulcan Material Co.'s Consumers Division. **Foster M. Wells,** design engineer, has been named manager of the newly created Department of Engineering Services for Consumers.

**William T. Ingram,** New York City consulting engineer, has opened a West Coast office in Walnut Creek, Calif. **Fred R. Ingram** is the associate in charge of the new office.

**Rear Admiral William O. Gallery,** (ret.) has been named assistant to the president of Graham, Anderson, Probst & White, Chicago architects and engineers.

**Michael K. Johns** has opened consulting offices in Washington, D. C. He has been a partner with Beall & LeMay, structural engineers.

**James C. Ryan** has joined Theodore Dastoli and Associates, civil engineers of Youngstown, Ohio. For the past 16 years he has been commissioner of engineering for the city.

**A. N. Vanderlip** will continue the New York City consulting engineering practice of the late F. W. Scheidenhelm.

**Lee B. Hertzberg** is supervising engineer for California's East Bay Municipal Utility District's mechanical and electrical design section. He succeeds **Leslie Paul,** who retired after 38 years service with the district.

Six new associates have been appointed to the New York City architectural firm of Voorhees, Walker, Smith, Smith & Haines. They are: **Benjamin Bailyn, John Delavan, Lee Economides, Robert Lundberg, John Loughnane** and **Allen Nathanson.**

**Grover C. Haynes,** consulting engineer, has opened an office in Asheville, N. C.

**Bernard L. Miller** has been named to a vice presidency with Smith, Hinchman and Grylls, Associates, Inc., Detroit architectural and engineering firm. He has been a member of the organization since 1941 and an associate since 1943.

**Thomas K. Wimsatt** is the new vice president in charge of engineering for Encrete, Inc., Dayton engineering and construction company.

**Samuel O. Linzell** has joined Michael Baker Jr. of Rochester, Pa. as manager of the consulting engineering firm's midwest operations.

**Arthur J. Good** has been elected vice president and treasurer of Stone & Webster Engineering Corp., succeeding **Alfred L. Lartridge,** who becomes executive vice president. Mr. Good has been controller since 1956.

**R. B. McEachern** and **J. A. Samuelson** have been elected president and executive vice president respectively of the General Construction Co., Seattle.

**Robert F. Strangmann** takes over as a vice president of the Arundel Corp. He has been associated with the pre-mixed concrete business of the corporation for 25 years.

**George McDougall** has been appointed manager of all South Carolina operations for Daniel Construction Co. A member of the firm for 13 years Mr. McDougall's last position was chief engineer.

Promotions at the Hercules Powder Company have made **George H. Ripley,** chief engineer and **Edward K. Lefren,** assistant chief engineer.

**E. Alfred Picardi** is the new chief structural engineer at Skidmore, Owings & Merrill, architects-engineers, Chicago. Since 1955 he has been with Bellman, Gillett and Richards, Toledo architects.

**Eugene Weldon Robbins** joins the Washington staff of the American Road Builder's Association as managing director of the contractors division. Mr. Robbins has been an executive with the Houston Chamber of Commerce.

**Charles R. Roberts** has been elected executive vice president of Macomber Inc., Canton, Ohio. He had been in charge of operations of the company's Rock Island Steel Division.

**C. M. Basile** is the new president of Link-Belt Speeder Corp., Cedar Rapids, Iowa. Since 1950 he has been director and vice president in charge of operations. A graduate of the Illinois Institute of Technology, Mr. Basile has been with the company for 31 years.

Mr. Basile succeeds **D. W. Lehti** who retires after 25 years with the company. Mr. Lehti became vice president of the firm in 1946 and president in 1947.

**Forrest E. Byrnes** has joined Daniel, Mann, Johnson & Mendenhall, Los Angeles consulting engineers. He has been assistant to the company's Saigon, South Vietnam, office. Since 1946 he was with the Bureau of Reclamation.

**Francis H. May Jr.** is vice president in charge of administration of Johns-Manville Fiberglass, Inc. Toledo.

**Thomas H. Spence** and **Cay G. Weinel, Jr.,** have formed the partnership of **Spence & Weinel,** Consulting Engineers, St. Louis. Mr. Spence is former chief of construction and surveys for the Metropolitan St. Louis Sewer District. Mr. Weinel is the former chief engineer for the Crow Contracting Corp., St. Louis.

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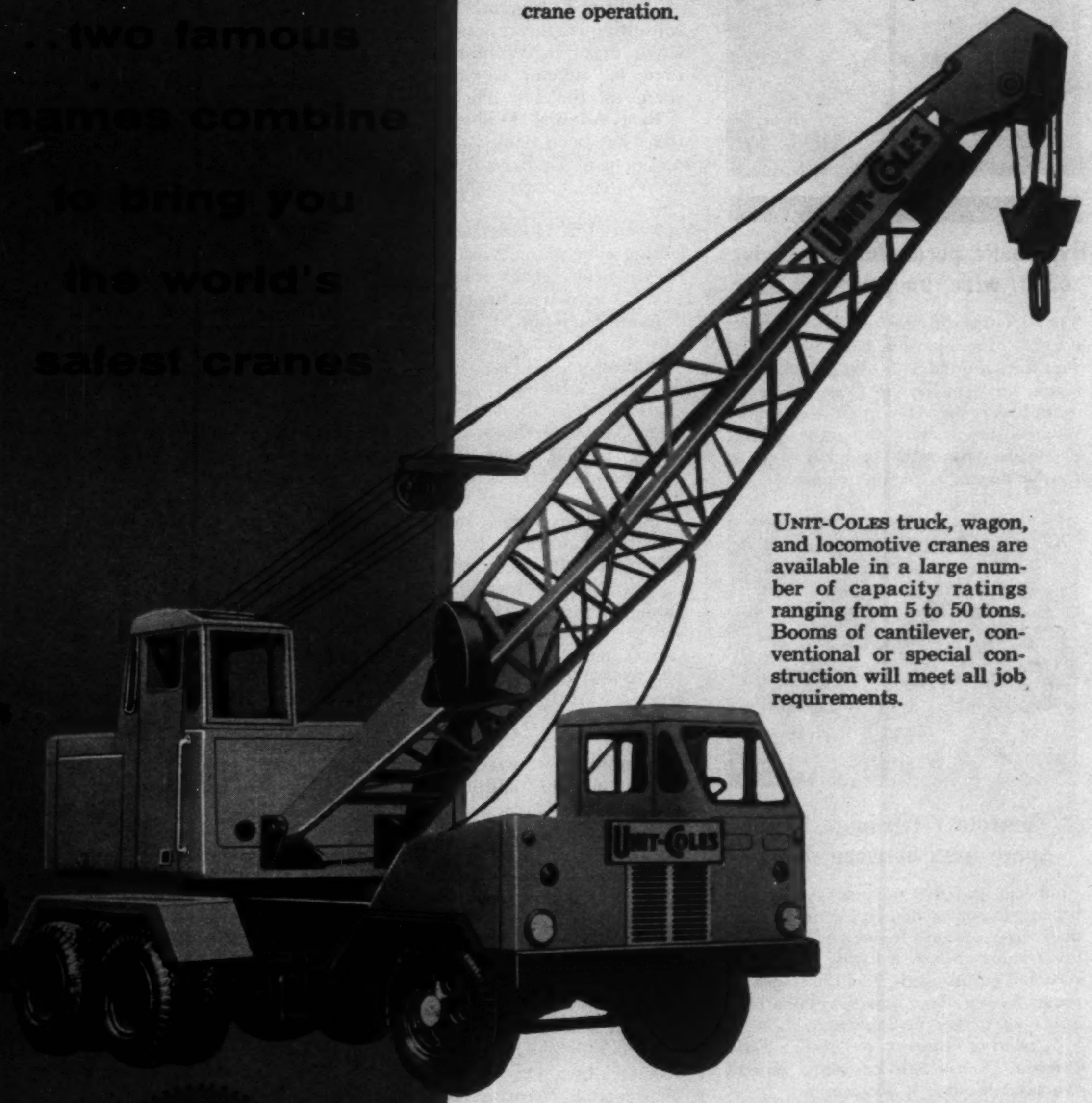

UNIT-COLES truck, wagon, and locomotive cranes are available in a large number of capacity ratings ranging from 5 to 50 tons. Booms of cantilever, conventional or special construction will meet all job requirements.

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## Obituaries

### William Delano, Architect; Noted for Public Buildings

William Delano, 86, architect who designed the balcony on the South Portico of the White House, died in in New York City. Mr. Delano, designer of many public buildings and homes retired in 1950 as senior partner in Delano & Aldrich, New York City. He had been with the firm since 1903.

In 1953 Mr. Delano received the gold medal of the American Institute of Architects, the society's highest professional honor. And in 1945 his firm won a competition for enlarging the facilities of the U. S. Military Academy.

A native of New York City, Mr. Delano received his bachelor of arts degree from Yale in 1895. He returned to the university to earn his bachelor of fine arts degree in 1908 and his master of fine arts in 1939. He also studied in Paris. From 1903 to 1910 he was a professor of design at Columbia University.

Mr. Delano was a member of the board of design for the New York World's Fair in 1939. In 1949 he took over as architectural consultant to the Commission of Renovation of the White House, a position he carried until 1952.

His firm was involved in such projects as the new American Embassy in Paris, the Japanese Embassy in Washington and LaGuardia Field terminal for Pan American World Airways.

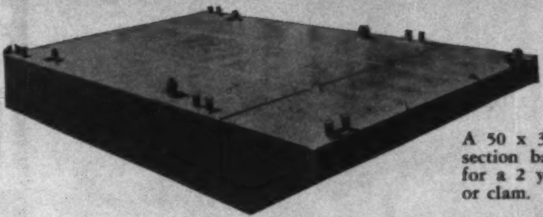
### Benjamin H. Petty Dies; Retired Purdue Professor

Benjamin H. Petty, 71, professor emeritus of highway engineering at Purdue University, died en route to Florida from his home in West Lafayette, Ind. Professor Petty, who directed the annual Purdue Road School from 1924 to 1958, joined the University in 1920 after spending seven years from the Morgan Engineering Co., Dayton, Ohio. He retired from his teaching post last year.

In 1958 Professor Petty established at the Purdue Civil Engineering School the Ben H. Petty Award for outstanding contribution to highway progress in Indiana. He was selected as the first recipient.

A 1913 graduate of Purdue's Civil Engineering School, Professor Petty is a former president of the education division of the American Road Builders Association. He has also been chairman of the education committee of the highway division of the American Society of Civil Engineers.

MANITOWOC
SECTIONAL BARGES



A 50 x 30 foot four-section barge suitable for a 2 yard dragline or clam.

- For floating all sizes of lift cranes, clams, draglines and other contractors' equipment.
- Easily assembled or knocked down for moving by rail or highway.
- Sections can be assembled into numerous barge sizes.
- Spuds, deck fittings, loading ramps and other accessories available.

Above, a sectional barge completely assembled with crane, spuds and deck equipment ready to go to work.

Designed for the contractor who needs low cost, flexible and portable floating equipment, a typical clam operation performed from a sectional barge.

*Write for additional information and prices.*

*Sold direct or through Manitowoc Engineering Corporation distributors.*

MANITOWOC SHIPBUILDING INC.
MANITOWOC • WISCONSIN

DIG DRY

It's Faster and Cheaper
MORETRENCH WELLPOINT SYSTEM
*Guarantees Results on Wet Jobs*
*Send for Catalog*
MORETRENCH CORPORATION
World's Oldest, Largest and Most Experienced Predrainage Organization
Main Office & Plant: Rockaway, N. J.
Chicago, Ill., Tampa, Fla., Houston, Tex., Hackensack, N. J.

# DON'T BE FOOLED BY INITIAL PIPE COSTS...

**Certain factors concerning the type of pipe to be used for a proposed water or gas project must be examined carefully:**

**First**

**—how much does the pipe cost, compared to other types?**

**Second**

**—how often will it require repair?**

**Third**

**—how long before it has to be replaced?**

**After all, how much money do you really save if you buy the cheapest pipe . . . then have to repair it frequently . . . and *then* have to replace it within a decade or two?**

## You save with cast iron pipe

**Sometimes the first cost of jobs where cast iron pipe is specified, is higher than similar projects using cheaper pipe. Yet, in the long run, cast iron pipe costs *less!* Here's why:**

- **Cast iron pipe rarely requires repairs. Its rugged construction, corrosion-resistant qualities and bottle-tight rubber-ring joints will withstand the most severe pressures. Once an investment is made in cast iron pipe, it is usually your first and last cost because of the absence of maintenance or repairs.**
- **Cast iron pipe is built to *last*—98 American cities will testify to that. They've had cast iron pipe installations in constant use for over a century! In fact, in Versailles, France, they're still using cast iron pipe water mains that were laid in 1664! Once cast iron pipe is in the ground, it stays there!**

**Don't be fooled by "low-cost" pipe. Insist on the pipe that will actually save you money over a period of years . . .**

In Nebraska—Here a section of cast iron pipe is being relocated. Twenty-five years old, the pipe is still in excellent condition—has never required major repair . . . or replacement.

***Rely on* CAST IRON PIPE**

In Indiana (above)—"All-weather" cast iron pipe is quickly installed despite wet trench conditions. Slip-on joints were easily assembled, with one workman using a crowbar.

In Kansas (above)—36" cast iron water main. Another part of this main was floated out of its trench by a heavy downpour. Later a 150 psi water test revealed no leaks in the slip-on joints!

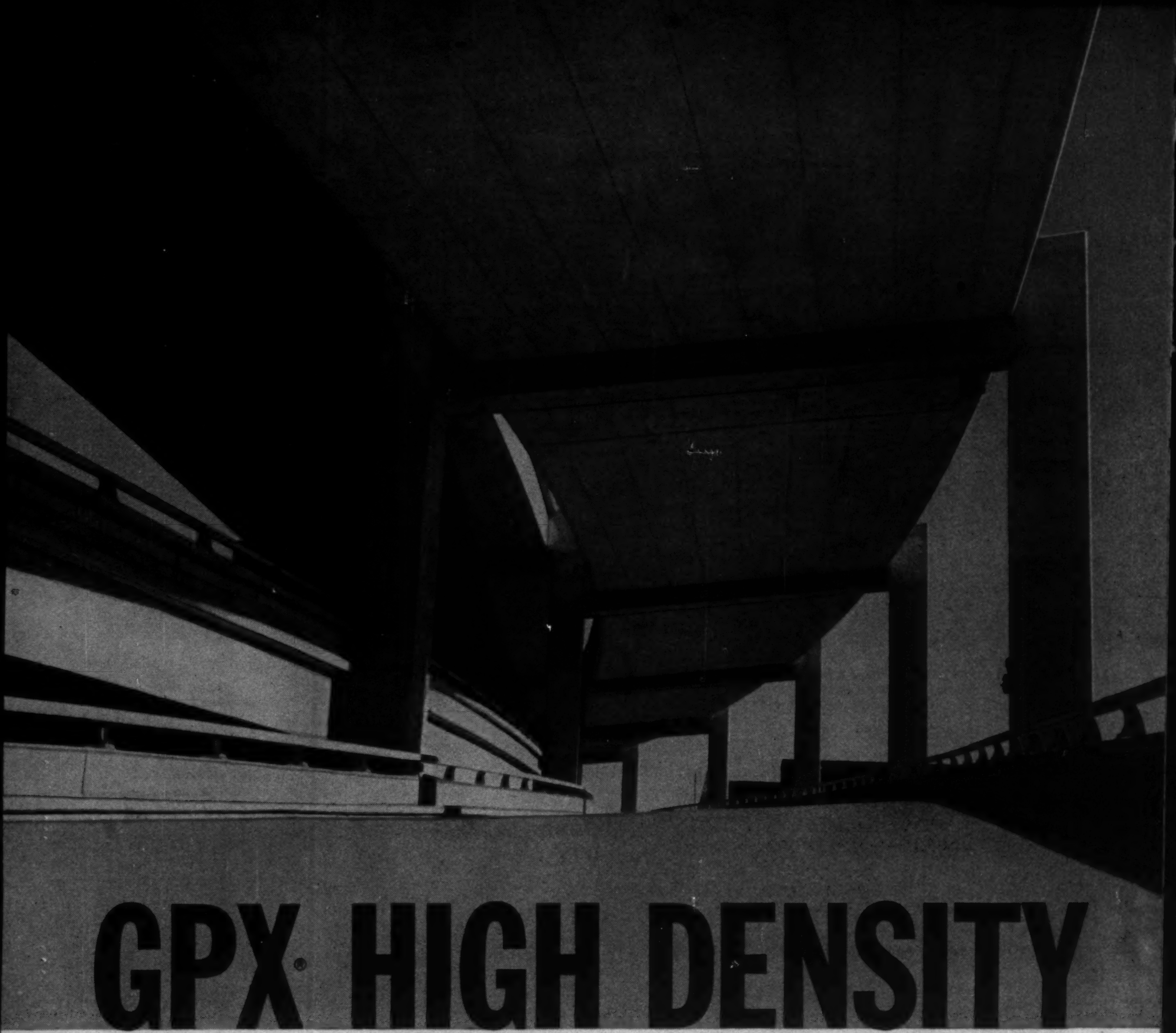
In Pennsylvania (below)—This 16" cast iron pipe is being installed as fast as the trench hoe can prepare the trench.

Handy lengths and slip-on joints make cast iron pipe easy to handle, even in crowded neighborhood sectors; require less labor.

# CAST IRON PIPE

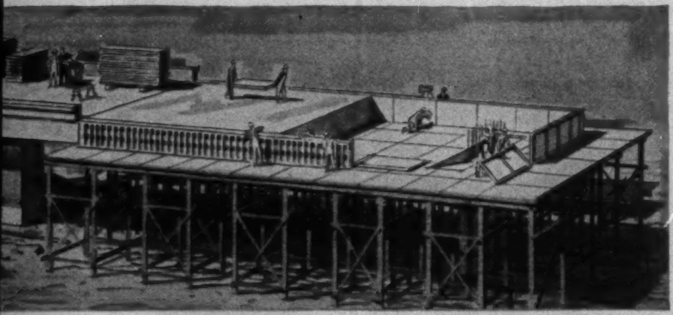
THE MARK OF THE 100-YEAR PIPE

**Cast Iron Pipe Research Association,**
**Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois**



# GPX® HIGH DENSITY

*Overlaid plywood for smoother finish, faster stripping, longer life!*



FOR A BETTER JOB, SPECIFY GPX HIGH DENSITY

Whether it's a skyway, or a skyscraper, this high density overlaid plywood is the ideal concrete form.

*Smoother surface.* You get a handsome concrete face, unmarred by grain, checks or patches. In buildings, ceiling slabs can be quickly prepared for painting.

*Faster stripping.* Smooth waterproof panels won't cling to concrete, are immediately available for re-use.

*Longer form life.* Form life is limited only by the number of cuts, and handling care. Available in all standard sizes and can be custom-sized. Write today for sample, specifications, and local source. Address Georgia-Pacific, Dept. ENR 260, Equitable Bldg., Portland, Oregon.

GP **GEORGIA-PACIFIC**

Plywood & Redwood • Lumber & Hardboard • Pulp & Paper

### Major equipment items are priced for . . .

# Fort Wayne Sewage Plant

Fort Wayne, Ind., is spending $2,431,043 to raise the capacity of its 24-mgd sewage treatment plant to 32 mgd by the addition of a one-story and basement stone and reinforced concrete addition to the digester control building, and additional primary, aeration and final tanks, and digesters. This averages $303,880 per mgd of added capacity. Consoer, Townsend & Associates, Chicago, is the consultant.

The award to C & C Construction Co., Inc., Fort Wayne (21% below the engineer's estimate) is on a base bid of $2,373,243, plus an additional $66,200 for Chain Belt unitube sludge collectors for the existing final tanks, added at the time the contract was signed, less adjustment of $8,400 on selection of certain equipment items.

Rock excavation, timber sheeting and bracing, concrete cradle, concrete piling and tension tests, and foundation materials, were bid on a unit price basis; the remainder of the work on the treatment plant in a lump sum bid. Equipment bids were based on two to six alternates. Major equipment items included in the lump sum bid, are tabulated below.

Prevailing wage rates include: power crane, dragline, derrick, shovel and hoist operators, $3.50; carpenters, $3.425; piledrivers, $3.525; common laborers, $2.575.

## Base Bid

| | | |
|---|---|---|
| 1C | C & C Constr. Co., Inc., Ft. Wayne | $2,373,243 |
| 2 | Tousley Constr. Co., Inc., Indianapolis | 2,521,320 |
| 12 | Buesching Bros. Constr. Co., Inc., Ft. Wayne | 3,082,280 |
| EE | Consoer, Townsend & Asso., Chicago, Ill. | 3,100,000 |

| Bids: 9-15-59<br>Items | Unit | Quantity | Unit Prices<br>1C | 2 |
|---|---|---|---|---|
| Excavation, rock | cy | 20 | $5.00 | $25.00 |
| Timber shtg & bracing | Mfbm | 5 | 40.00 | 300.00 |
| Concrete cradle | cy | 50 | 20.00 | 50.00 |
| Cr stn or grav fndn matl | t | 500 | 5.00 | 3.50 |
| Concrete piling | lf | 64,000 | 4.10 | 4.10 |
| pile tension test | ea | 3 | 1,200 | 2,000 |
| Base bid for balance of completed work | ls | job | 2,103,443 | 2,246,670 |

## Cost basis for changes:

| | | | |
|---|---|---|---|
| Exc, hand, dry earth | cy | 8.00 | 8.00 |
| wet earth | cy | 15.00 | 12.00 |
| machine, dry earth | cy | 2.00 | 2.00 |
| wet earth | cy | 5.00 | 8.00 |
| Conc, floor agst ground | cy | 30.00 | 60.00 |
| formed walls | cy | 70.00 | 75.00 |
| slabs, beams, columns | cy | 125.00 | 90.00 |
| Forms, wall | sf | 1.00 | 0.65 |
| slab, beams, columns | sf | 1.50 | 0.75 |
| Steel, reinforcing | lb | 0.17 | 0.15 |
| Concrete sidewalk | sf | 0.75 | 0.50 |

## Construction Alternates:

| | | |
|---|---|---|
| Deductive: omit gas storage sphere | $38,000 | $39,500 |
| Additive: If Unitube sludge collectors are added: | | |
| when contract is executed using, Chain Belt equipment | 66,200 | 64,783 |
| Walker Process equipment | nb | 88,379 |
| 240 days before completion of contract using, Chain Belt equipment | 75,000 | 68,320 |
| Walker Process equipment | nb | 88,379 |

Commence: 30 cal days after award
Completion schedule: 630 cal days

## Major Equipment Items included in Base Bid

| Bids: 9-15-59<br>Items | # of Units | Lump Sum Prices<br>1C | 2 |
|---|---|---|---|
| Primary tank collectors, 37.5'x112'x 8' each: Chain Belt | 5 | $56,200 | $57,428 |
| alt: Walker Process Equip | | 57,100 | 58,358 |
| alt: Link Belt | | 63,600 | 64,737 |
| alt: American Well Works | | nb | 70,355 |
| Scum mechanism modifications, existing primary tanks, ea 33' wide: Chain Belt Co | 3 | 3,400 | 3,600 |
| alt: Walker Process Equip | | 3,400 | 3,698 |
| alt: Link Belt | | 3,500 | 3,855 |
| alt: American Well Works | | nb | 4,100 |
| Air diffusion units, Chicago Pump, swing type | 60 | 64,100 | 66,476 |
| fixed type | 1 | 800.00 | 604.00 |
| Final tank collectors, 110' dia: Chain Belt | 2 | 34,500 | 34,466 |
| alt: Walker Process Equip | | 47,400 | 46,197 |
| Blower engine drive & accessories, White Diesel engine, Roots-Connersville blower, 7,000 cfm | 1 | 57,000 | 58,990 |
| Raw sewage pump, 20 mgd, engine drive & accessories: White Diesel engine, Worthington pump | 1 | 27,500 | 29,234 |
| alt: Climax engine, Worthington pump | | 29,850 | 31,373 |
| Fairbanks-Morse pump | | 29,550 | nb |
| Sludge circulation pumps, 400 gpm—45': Chicago Pump Co | 4 | 4,000 | 4,000 |
| alt: Yeoman Bros | | 8,660 | 8,290 |
| alt: Wheeler-Economy | | 4,600 | nb |
| alt: American Well Works | | 4,100 | 3,889 |
| alt: C. H. Wheeler/Buffalo Pump | | nb | 4,595 |
| Spray water pumps, 550 gpm—75': Chicago Pump Co | 2 | 2,200 | 2,164 |
| alt: Yeoman Bros | | 2,500 | 2,973 |
| alt: American Well Works | | 2,000 | 1,809 |
| alt: Wheeler-Economy | | 2,200 | nb |
| alt: C. H. Wheeler or Buffalo Pump | | nb | 2,089 |
| Digested sludge pump, 450 gpm—87': Chicago Pump Co | 1 | 1,200 | 1,213 |
| alt: Yeoman Bros | | 2,240 | 2,211 |
| alt: American Well Works | | 1,000 | 963.00 |
| alt: Wheeler Economy | | 1,200 | nb |
| alt: C. H. Wheeler or Buffalo Pump | | nb | 1,087 |
| Return sludge air pumps, 3.2 mgd: Walker Process Equip | 2 | 4,000 | 4,969 |
| Air Filter: | | | |
| 11,000 cfm automatic, Amer Air Filter | 1 | 1,400 | 1,482 |
| 24,000 cfm dry type, Cambridge Filter | 1 | 1,750 | 2,130 |
| alt: American Air Filter | | 1,650 | 1,984 |
| Digester covers, 90' dia: Pacific Flush Tank | 2 | 71,000 | 64,750 |
| alt: Chicago Pump Co | | 75,700 | nb |
| alt: Ralph B. Carter | | 99,300 | 70,432 |
| Gas storage sphere, 45' dia: Chicago Bridge & Iron | 1 | 36,700 | 38,910 |
| alt: Pittsburgh-Des Moines | | 35,700 | 39,450 |
| Sludge heat exchangers, 2,800,000 btu/hr: Walker Process Equip | 2 | 20,300 | 21,510 |
| alt: Pacific Flush Tank Co | | 16,800 | 18,014 |
| alt: Ralph B. Carter | | 16,300 | 15,574 |
| Engine jacket water cool exchanger, 4,850,000 btu/hr: Bell & Gossett | 1 | 1,400 | 1,500 |
| alt: Kewanee-Ross Corp | | 1,300 | 1,365 |
| Meters & metering instruments, Builders—Providence | | 38,400 | 42,933 |
| Meter panel, Builders—Providence | | 6,300 | 6,830 |
| Displacement type gas meters, Roots-Connersville | 3 | 2,200 | 2,454 |
| Diaphragm type gas meter, Amer Meter | 1 | 400.00 | 400.00 |
| alt: Rockwell Mfg. Co | | 670.00 | nb |
| Major gate valves, 2 at 30"; 2 at 18"; 2 at 16": Ludlow Valve Mfg | 6 | 5,000 | 5,070 |
| alt: Darling Valve Co | | 6,630 | nb |
| alt: M & H | | 5,000 | 5,019 |
| Major check valves, 1 at 20x24", 2 at 18": Ludlow Valve Mfg | | 3,350 | 3,000 |
| alt: M & H | | 3,300 | nb |
| alt: Darling Valve Co | | 3,700 | nb |
| Sluice gates & operating stands, 20 at 18x18; 2 at 36x36; 2 at 8": Chapman Valve Co | | 19,400 | 20,106 |
| alt: Rodney Hunt | | 18,200 | 18,380 |
| Butterfly valves handwheel, 2 at 18"; 4 at 10" w/operators, 1 at 8"; 2 at 6" W. S. Rockwell Co | | 6,200 | 6,544 |
| alt: Henry Pratt Co | | 7,300 | 7,498 |
| alt: Allis Chalmers | | 4,700 | 4,568 |
| Backwater gate, 84", Brown & Brown | 1 | $5,800 | $6,094 |
| ralt: Amco | | 3,000 | nb |
| Motor control centers: General Elec. | | 21,815 | 23,537 |
| alt: Westinghouse | | 21,815 | 22,697 |
| alt: Cutler-Hammer | | 22,315 | nb |
| alt: Federal Pacific | | nb | 23,897 |
| Sump pumps—4 at 60 gpm—42'; 1 at 75 gpm—30', Chicago Pump Co. | 5 | 3,800 | 3,700 |
| alt: Weil Co | | 4,550 | 4,600 |
| Protected water pumps, 30 gpm—180' Chicago Pump | 2 | 2,500 | 1,450 |
| alt: Aurora Pump Co | | 2,000 | nb |
| alt: Weil Pump Co | | 2,500 | nb |
| alt: Yeomans | | nb | 1,400 |
| Boiler, 4,180 Mbh, Cleaver Brooks Co | 1 | 8,000 | 8,400 |
| alt: Superior Combustion Ind. Co | | 8,250 | 8,512 |
| alt: Kewanee Boiler Co | | 8,250 | 8,516 |
| alt: Atlas | | 7,800 | nb |
| Jacket water heat exchanger, Bell & Gossett | 1 | 6,500 | 6,974 |
| alt: Kewanee-Ross Corp | | 5,500 | 5,700 |
| Unit heaters, American Blower | 16 | 2,000 | 1,450 |
| alt: Trane Co | | 2,000 | 1,437 |
| alt: ILG Elec Vent Co | | 2,150 | 1,479 |
| Circulating pumps, 1 at 51 gpm—155'; 2 at 420 gpm—80'; 1 at 80 gpm—15': Bell & Gossett | 4 | 1,800 | 1,727 |
| alt: Chicago Pump Co | | 1,800 | 1,804 |
| Htg & vent, unit American Blower Co | | 1,800 | 1,814 |
| Condensate return pumps, 1.5 to 15 gpm, Weil Pump | 5 | 2,400 | 2,588 |
| alt: Chicago Pump Co | | 3,350 | 3,270 |
| alt: Skidmore | | 2,100 | nb |
| Exhaust fans, ILG Elec Vent Co | 11 | 4,000 | 5,218 |
| alt: American Blower | | 2,850 | 3,702 |
| Supply fans, ILG Elec Vent Co | 5 | 3,000 | 3,673 |
| alt: American Blower | | 1,900 | 2,409 |
| Air condition units, American Blower | 3 | 3,000 | 3,098 |
| Condensing unit, Trane Co | | 1,600 | 1,822 |
| alt: Carrier Corp | | 1,820 | 2,026 |
| alt: Bell & Gossett | | 2,260 | 2,543 |

# LaGuardia Airport Award is 24% under Estimate

Geo. M. Brewster & Son, Inc., Bogota, N. J., was successful bidder at $1,123,950 for the Port of New York Authority contract for subsoil stabilization of relocated runway 13-31 at the LaGuardia Airport, Queens, N. Y. John M. Kyle is Chief Engineer of the Authority.

The award was 24% under the engineer's estimate, almost 5% under the second bid and 32% under the high of the nine bids.

Work includes fill, sand drains and surcharge fill. The sand fill is available at the former boat basin. The contractor has the option of using available surcharge fill, or hauling his own to the construction site.

The work commenced in November and is scheduled for Feb. 25, 1960 completion. Liquidated damages are $2,000 per day.

The bidding included:

| | | |
|---|---|---|
| 1C | Geo. M. Brewster & Son, Inc., Bogota, N. J. | $1,123,950 |
| 2 | Rusciano Constr. Corp. & Del Balso Constr. Corp. Pelham Manor, N. Y. | 1,178,900 |
| 9 | Queens Structure Corp., Woodside, L. I. | 1,647,000 |
| EE | Port of New York Authority, N Y. C. | 1,480,000 |

| Bids: 10-23-59<br>Items | Unit | Quantity | Unit Prices<br>1C | 2 |
|---|---|---|---|---|
| Fill, stages 1 & 2 | cy | 350,000 | $0.65 | $0.80 |
| surcharge, stage 3 | cy | 287,000 | 0.85 | 0.80 |
| Sand drains | lf | 782,000 | 0.75 | 0.75 |
| Settlement plates | ea | 80 | 100.00 | 100.00 |
| Unclassified work | ls | job | 60,000 | 77,800 |

# Materials and Labor Prices **Monthly Market Quotations by ENR Field Reporters**

## CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

| | PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted | | | SAND AND GRAVEL Per ton, carload lots | | | CRUSHED STONE Per ton, carload lots | | CRUSHED SLAG Per ton, carload lots, f.o.b. plant | | CONCRETE BLOCK 8x8x16-in.* truckload del.* per block | | CONCRETE Ready Mixed 1:2:4 del. per cy 50 cy & over |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Paper | Bulk | Mortar | Gravel, 1½ in. | Gravel, ¾ in. | Sand | 1½ in. | ¾ in. | 1½ in. | ¾ in. | Sand grav. | Lt. wgt. agg. | |
| Atlanta | $4.38a‡ | $3.88a‡ | $3.68a‡ | $3.10s‡ | $3.10s‡ | $1.85‡s | $2.18s | $2.33s | $1.65r | $1.75r | $0.175o | $0.21s | $13.75g |
| Baltimore | 4.42a | 3.91a | 3.56a | 2.80‡a | 2.80‡a | 2.25‡a | 2.85‡a | 2.90‡a | 2.05‡a | 2.00‡a | .19a | .19a | 13.50cu |
| Birmingham | 4.43c | 3.40cf | .. | 2.53ns | 2.53ns | 2.13ns | 2.75s | 2.75s | 1.65d | 1.75d | .18 | .18 | 14.25q |
| Boston | 5.83ip | 4.52ap | 4.90imp | 3.00qaz | 3.00qaz | 3.00qaz | 1.75qaz | 1.85qaz | .... | .... | .23o | .275ae | 15.00q |
| Chicago | 4.40ag | 4.02ag- | 4.15g | 3.78‡s | 3.78‡be | 4.13‡be | 3.95‡be | 3.95‡be | 2.25‡s | 2.25‡s | .26‡s | 26‡be | 14.00s |
| Cincinnati | 4.68c | 4.16c | 4.18c | 2.29‡cu | 2.34‡cu | 2.44‡cu | 2.51‡cu | 2.74‡cu | 1.80u | 1.80u | .20s | .25ao | 15.00gr |
| Cleveland | 1.37‡ | .... | 4.19‡ae | 2.25ae | 2.10ae | 1.75ae | 2.80fy | 2.80fy | 2.20‡f | 2.20‡f | .... | .23f | 17.25u |
| Dallas | 3.65a | 3.25a | 3.53a | 2.65‡a | 2.75‡a | 1.90‡ | 2.43 | 2.63 | .... | .... | .... | 27 | 12.50z |
| Denver | 4.89a | 4.39a | 4.89 | 1.95‡ | 2.15‡ | 1.42‡b | .... | 3.00‡z | .... | .... | .25 | .27ao | 11.90 |
| Detroit | 4.50a | 3.89agq | 3.97a | 4.50‡abm | 4.50‡abm | 4.25‡abm | 3.75‡abm | 3.75‡abm | 2.53aqsa | 2.53aqsa | .22u | .25‡au | 15.50eas |
| Kansas City | 4.52a | 3.92s | 4.30a | .... | .... | 1.85‡a | 2.00‡a | 2.00‡a | .... | .... | .22a | .26c | 14.00 |
| Los Angeles#‡ | 5.12ch | 4.68ch | 5.60c | 2.56‡at | 2.76‡at | 2.41‡at | 2.41‡at | 2.46‡at | .... | .... | .19f | .305 | 12.46klz |
| Minneapolis | 4.66a | 4.15a | 4.25a | 2.70‡ae | 2.70‡ae | 1.60‡ae | 3.95‡ae | 3.95‡ae | .... | .... | .20q | .... | 14.30f |
| Montreal | 3.36‡de† | 3.11‡de† | 3.72‡de† | 1.90‡a† | 2.15‡a† | 2.40‡a | 1.90‡† | 2.15‡† | 2.00† | 2.00† | .20† | .28‡† | 10.80ak† |
| New Orleans | 4.06b | 3.65b | 3.85b | 2.61b | 2.61b | 2.16b† | .... | .... | 1.65d | 1.75d | .29r | .30 | 14.00o |
| New York | 4.68a | 4.18a | 3.75a | .. | 3.20bk | 2.30bkw | 2.85blbb | 2.85blbb | .... | .... | .265nwo | .32bwe | 17.00ay |
| Philadelphia | 4.49‡ae | 3.99‡ae | 3.51‡e | 1.95‡a | 1.95‡a | 1.55‡a | 2.00‡a | 2.30‡a | 2.25‡a | 2.25‡a | .... | .225 | 13 90s |
| Pittsburgh | 5.65bjk | 4.62bj | 5.00bjl | 2.68‡aqv | 2.68‡aqv | 3.08‡aqv | 2.00‡aqv | 2.00‡aqv | 2.10w | 2.10w | .26rz | .26rz | 16.15o |
| St. Louis## | 4.54a | 4.04a | 4.24a | 3.40‡as | 3.40‡as | 2.40/3.40‡as | 1.75‡s | 1.75‡s | .... | .... | .255‡o | .315‡co | 13.65/14.10g |
| San Francisco | 4.34c | 3.79c | 4.78c | 2.02 | 2.02 | 2.12 | 2.17 | 2.17 | .... | .... | .24 | .28cl | 13.00cw |
| Seattle | 4.47‡a | 3.75ag | 4.65a | 4.25‡bm | 4.25‡bm | 4.25‡bm | 4.50‡bm | 4.50‡bm | .... | .... | .324s | .45cs | 13.90j |
| Toronto | 5.20i | 3.84t | 5.20i | 2.40 | 2.40 | 2.05 | 2.40 | 2.40 | 2.40 | 2.40 | .26 | .275cs | 13.75q |

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax ## Add 2% intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots, fob yard. *k 100 bag lots *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days. *o Plus 50¢ for Sat. del. *p 5-8 ton truckload. *q F.o.b. mill *s In bags & bbl. Only *t min. 7 tons

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons up. *d Less 5¢ disc. 10 days. *e Less 2% disc. 10th. *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q F.o.b. yard. *r less 5% disc. 15th. *s Less 2% disc. 10 days. *t Less 10¢ disc. 10 days. *u Less 5¢ disc. 10 days. *v Less 2% disc. 15 days. *w Less 10¢ disc. 15 days. *x Incl. 35¢ switch. charge. *y F.o.b. dock. *z 5-8 tons. *aa Less 5% disc. 15 days. *hb Less 2% 25th of month

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete, *e 5¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *l F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 18. *o Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 5% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex, 7 x 8 x 18. *u Less 5% disc. 10 days. *v Less 12% disc. 15th.

READY MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more. *c 10–100 cy. *d 1–3 mi. zone add 15¢ for ea. add'l 1-mi. zone. *e 3,000 lb comp. *f 2,500 lb. comp., less 5% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 6% mun. & prov. tax. *l 1:2½:3½ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days. *t Incl. 50¢ heating. *u Less 2% disc. 15th. *v Sat. del.+50¢. *w 10-100 cy. *x Del in zone 20-B. *y less 25¢, 10 days. *z less 1% in 30 days. *aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 40¢ per bbl., not refundable *Prices guaranteed through December 31, 1959*

| | Bulk | | Bulk | | Bulk | | Bulk | | Bulk |
|---|---|---|---|---|---|---|---|---|---|
| Richard City, Tenn | $3.45 | Buffington, Ind | $3.40 | Steelton, Minn | $3.45 | Muskegon, Mich | $3.45 | Toledo, O | $3.45 |
| Clinchfield, Ga | 3.45 | Independence, Kan | 3.25 | Leeds, Ala | 3.30 | Saginaw, Mich | 3.45 | Milwaukee, Wis | 3.50 |
| Kingsport, Tenn | 3.45 | Hannibal, Mo | 3.35 | Duluth, Minn | 3.45 | Wyandotte, Mich | 3.45 | Green Bay, Wis | 3.50 |
| West Des Moines, Iowa | 3.50 | Northampton, Pa | 3.50 | Hudson, N. Y | 3.50 | Buffalo, N. Y | 3.55 | Ironton, O | 3.45 |
| Nazareth, Pa | 3.50 | Universal, Pa | 3.60 | Alpena, Mich | 3.35 | Oswego, N. Y | 3.60 | Montreal City | 2.56 |
| Bath, Pa | 3.50 | Waco, Tex. (+ 10¢ tax) | 3.35 | Detroit, Mich | 3.45 | Cleveland, O | 3.50 | W. Winfield, Pa | 3.60 |
| Lesley, Pa | 3.50 | Giant, S. C | 3.45 | Howes Cave, N. Y | 3.50 | Alsen, N. Y | 3.50 | Security, Md | 3.50 |

## PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

| | PAVING BRICK AND BLOCK | | | PAVING ASPHALT Per ton, less than 80 penetration | | ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration | | CUTBACK ASPHALT MC per ton | | ROAD OIL Per gal. | ASPHALT EMULSION RSI Per gal. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Granite Per M lots of 50,000 4x4x8 in. | Brick per M 3x4x8½ in. carload lots | Wood per sq. yd. 3½ in. 16-lb. treat | Tank car | Drums | Tank car | Drums | Tank car | Drums | Tank car | Tank car | Drums |
| Atlanta | e | e | [illegible] | $28.70PS | $45.00PS | $0.2740PS | $0.235S | $0.1308wS | $0.245wS | $0.1258S | $0.1325S | $0.245 |
| Baltimore | e | e | [illegible] | 21.00i | ...... | .09i | 0.18i | .09iwE | .18iwE | .095i | .10i | 0.19i |
| Birmingham | ...... | 66.00i | ...... | 25.12 | 25.69O | .1069 | 0.1093O | .1162w | .11880w | .1006O | .1069 | 0.1093O |
| Boston | ...... | ...... | ...... | 22.00apS | 46.00apS | 22.00anS | 46.00anS | .105awF | .22awF | .14aOR | .15OR | ...... |
| Chicago | 150.00‡s | 95.00‡ab | 3.95/4.00‡aj | 22.00b | 32.00b | 20.40bv | 30.40bv | .10bwH | .18bwH | .085 | ...... | ...... |
| Cincinnati | ...... | ...... | ...... | 26.00SU | ...... | 26.00ff | ...... | .1165wSU | ...... | .109 | .1265 | ...... |
| Cleveland | ...... | 89.50‡d | 6.30 | 26.00tA | ...... | 26.00twA | ...... | .1165twAF | ...... | ...... | .1265tA | .31A |
| Dallas | e | 40/80p | e | 26.90 | 46.35 | .1138 | .1983 | 30.50 | 52.45 | .1100 | .1138 | .1983 |
| Denver | ...... | 62.00s | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Detroit | ...... | 116.00 | ...... | 30.90R | ...... | 31.00sR | ...... | .1342wIR | ...... | .1000 | . | .28 |
| Kansas City | e | e | e | 18.00cl | ...... | 18.00cs | ...... | .0825cwJ | ...... | .0791s | 0.125t | ...... |
| Los Angeles# | e | e | e | 21.50dms | ...... | 21.50dxz | ...... | 23.00dKx | ...... | 22.00dxas | 23.90jXv | 26.30jXv |
| Minneapolis | ...... | ...... | 3.78h | 25.00 | ...... | 26.00v | ...... | .11w | ...... | 0.10 | .1375bb | ...... |
| Montreal | e | e | e | 30.50n | 43.60n | .167n | .211n | 17.80nuE | 22.20nuE | .155n | .242n | .27nX |
| New Orleans | e | e | e | 20.00e | ...... | 20.00ev | ...... | .095ew | ...... | .085eB | .095eBL | .1905eB |
| New York | ...... | ...... | 3.70f | 23.99mO | 45.94mO | 23.99vtO | 45.94vtO | 10.61uF | 20.01uF | ...... | 10.68u | 20.11u |
| Philadelphia | ...... | ...... | ...... | 21U | ...... | 21U | ...... | .095U | ...... | .095U | ...... | ...... |
| Pittsburgh | 60.00k | 95.00n | 6.35n | 31.20is | ...... | 31.20isv | ...... | .1403‡S | ...... | .14‡S | .1403i | ...... |
| St Louis## | ...... | ...... | ...... | 19.74f | 21.19 | .1825f | .1825 | .0890f | .0915fw | 0.165f | .1825O | .30R |
| San Francisco | ...... | 70.00 | ...... | 22.50gdd | 41.00gdd | 22.50gksdd | 41.00gksdd | 22.50gNdd | 46.50gNdd | 23.25gsWdd | 23.50gsXdd | .2023gXdd |
| Seattle | ...... | ...... | ...... | 24.00s | 47.00h | 33.00sacc | 38.50 | 25.50KE | ...... | 28.75hsY | 25.80hsX | 49.80hrsX |
| Toronto | ...... | 135.50f‡ | 4.50f | 41.10 | 60.66ee | 0.2075 | 0.2773ee | 0.222w | 0.2704wee | 0.233 | 0.218Zee | .273Zee |

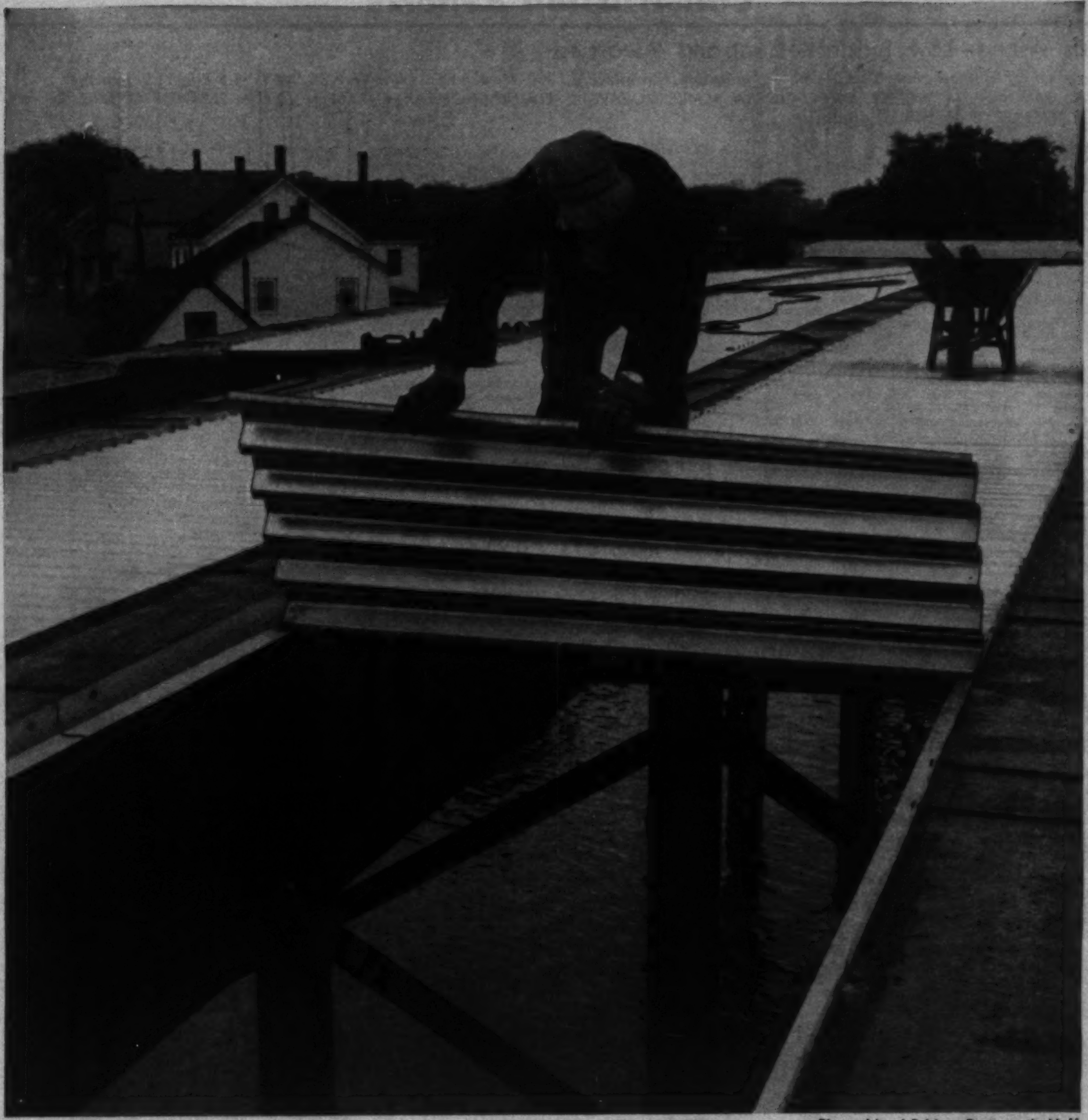
‡ Delivered. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3¾ x 8. *c 2¼ x 8¼ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb tr. *g Less $1/Mdisc. 15th. *h 2" tr, 8 lb. *i 3 x 3⅝ x 8½. *j 2½", 6 lb. tr. *k Used. *l Redshale. *m Pine; oak $6.57. *n Truck del. *o Less $1/M disc. 15 days. *p Used: $40; new: $80.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50–110 'penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland, *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS *H RC 0–5 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *M MC 1–5, RC 1–5, $0.0918. *N MC 3. *O Truckload. *P F.o.b. refinery, Atlanta. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi. *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax. *aa SC 3, 4, & 5. *bb RS 3. *cc In used drums. *ddl ess disc of $1 ton. ee 45 Imp. gal. drums *ff 60-150 penetration

### See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Jan. 21; Next, Feb. 18.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan. 28; Next, Feb. 25.
- Wage Rates, Building Board Insulation: Last, Jan. 28; Next, Jan. 28.
- Iron & Steel Products, Pipe: Last, Jan. 14; Next, Feb. 11.



Pierce Island Bridge, Portsmouth, N. H.

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# Construction Reports

## Bids Asked—Low Bidders—Contracts Awarded—

*Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager*
*J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports,*
*J. H. WEBBER, E. R. HUBER, Statistics.*

## NEW ENGLAND

### BUILDINGS—BA

▲ **Mass., Georgetown**—SCHOOL—BA 2/25—Town, Perley Elementary School, North St., Junior-Senior High School, Winter St. $2,000,000. Plans deposit $75. Ellsworth H. Tidd, 156 W. Main St., Georgetown, Mass., archt. CD 7/16.

### HEAVY CONSTRUCTION—LB & CA

▲ **M. A. Gammino Constr. Co.**, 728 Valley St., Providence, R. I., CA **$1,657,111**, est. $1,600,500, aqueduct reservoir, Cranston, PROVIDENCE, R. I. City, City Hall, Providence, R. I. Awarded Jan. 18. CD 1/8, under LB.

▲† **M. A. Gammino Constr. Co.**, 728 Valley St., Providence, R. I., LB **$3,790,000**, est. $6,665,190, breakwater, U. S. Naval Base, NBy 24924, Spec. No. 24924/59, NEWPORT, R. I. Dist. P. Wks. Office, 1ND, 495 Summer St., Boston 10, Mass. Bids Jan. 21. CD 12/11.

### BUILDINGS—LB & CA

▲ **John Bowen Co., Inc.**, 173 Boston St., Dorchester, Mass., CA Approx. **$1,500,000**, 3 DORMITORIES, NEWTON, MASS. Boston College, 140 Commonwealth Ave., Newton, Mass. CD 9/15.

▲ **Bonatelli Building Co., Inc.**, 118 Cottage Ave., North Providence, R. I., LB **$1,659,105**, HIGH SCHOOL, CUMBERLAND, R. I. Town, School Bldg. Comn., Cumberland, R. I. Bids Jan. 19. CD 12/29.

▲ **Webster Square Realty Corp.**, 1 Webster St., Hartford, Conn., CA **$1,100,000**, 15 stores, 200,000 sq. ft. SHOPPING CENTER, Rte. 72, "Webster Square Shopping Center," incl. 2 banks, 60,000 sq. ft. dpt. store for lease to Zayre's of Boston, Mass., BERLIN, CONN. David T. Chase, 85 King Philip Drive, West Hartford, Conn. Awarded Jan. 21. CD 7/24.

▲ **Arthur Primus**, Bristol Rd., Waterbury, Conn., Owner Builds, **$1,500,000**, 150 HOUSES, Camp St., Second Section, PLAINVILLE, Conn. CD 11/16.

## MIDDLE ATLANTIC

### BUILDINGS—BA

▲† **D. C., Wash.**—OFFICE—BA 2/18—Office of the Architect of the Capitol, U. S. Capitol, superstructure for addnl. office bldg. for U. S. House of Representatives. Plans deposit $250. Extended date. Harbeson, Hough, Livingston & Larson, Architect Bldg., Phila., Pa., archts. CD 10/30.

▲ **N. Y., New York**—HOSPITAL—BA 2/25—New York University-Bellevue Medical Center, 550 First Ave., Zone 16, 19 story hospital, East 33rd St. and First Ave. $20,000,000. Skidmore, Owings & Merrill, 575 Madison Ave., Zone 22, archts. CD 4/30/57.

▲ **Pa., Connellsville** — HOSPITAL—BA 3/2—General State Auth., 18 and Herr Sts., Harrisburg, 50 bed addn. to main hospital bldg. and imprvs. Connellsville State Hospital, $1,000,000. CD 12/26/57.

### BUILDINGS—SLC

▲ **Md., Baltimore**—EMBRYOLOGY LABORATORY—Office, Anderson, Beckwith & Haible, archts., 11 Beacon St., Boston 8, Mass., soon lets contract, 2 story, 114x222 ft., 3rd story, 82x222 ft., rein.-con. block, brick embryology laboratory, University Parkway, for Johns Hopkins University, 33rd and Charles Sts., Baltimore 18, Md. $1,000,000.

### HEAVY CONSTRUCTION—LB & CA

▲ **Peerless Constr. Co., Inc., & Waldman Constr. Co.**, 40-01 29th St., Long Island City, N. Y., LB **$3,508,000**, (8 bidders), constr. platform extension to stations of Lexington-4th Avenue Line, IRT Division, Contr. C-135, Manhattan Boro, NEW YORK, N. Y. New York Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. Bids Jan. 22. CD 12/24.

▲† **L. Rosenman Corp.**, 112 4th Ave., New York, N. Y., CA **$1,542,000** air conditioning Federal Office Bldg., 90 Church St., NEW YORK, N. Y. General Services Admin., 250 Hudson St., New York 13, N. Y. Bids Dec. 29. CD 1/6, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 1/20,
**George M. Brewster & Son**, 275 W. Fort Lee Rd., Bogota, N. J., LB **$2,058,628**, (10 bidders), interchange, Rtes. 130-73, Haddonfield Rd., Cinnaminson Twp., Burlington Co., and Pennsauken Twp., Camden Co. CD 12/30.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3,
**Williams Constr. Co.**, Middle River, Baltimore 25, Md., CA **$2,967,775**, 5.202 mi. roadway, part of Northeastern Expressway incl. 14 span steel beam bridge, three 3 span steel beam bridges, 5 double box culverts and 4 single box culverts north of Baltimore, Contr. B-635-9-46-80-112-420, Baltimore Co. Bids Dec. 22. CD 1/8, under LB.

### BUILDINGS—LB & CA

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 1, N. Y., CA **$2,370,000**, general contract addn. and modernization of (former Public School 5, Brooklyn) now George Westinghouse VOCATIONAL and TECHNICAL HIGH SCHOOL, BROOKLYN, N. Y. Supt. Design, Constr. & Physical Plant, Bureau Constr., 4th Fl., 42-15 Crescent St., Long Island City 1, N. Y. Bids Jan. 19. CD 1/21, under LB.

▲ **Superior Excavation & Foundation Corp.**, 3743 Boston Rd., Bronx, N. Y., CA, excavation for Cardinal Spellman HIGH SCHOOL, Baychester Ave. and E. 229 St., NEW YORK, N. Y. Archdiocesan Bldg. Comn., 451 Madison Ave., New York 22, N. Y. Total est. **$4,000,000**. CD 11/18/58.
**Grand Iron Works, Inc.**, 525 Tiffany, Bronx, N. Y., CA, supplying steel for Cardinal Spellman HIGH SCHOOL (New York, N. Y.).

### PROJECTS COVERED

#### *By Size*

**Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; Industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.**

#### *By Regions & Classes of Construction*

**(In order of Listing)**

**BIDS ASKED**
**LOW BIDDERS**
**CONTRACTS AWARDED**
**New England**
**Middle Atlantic**
**South**
**Middle West**
**West of Mississippi**
**Far West**

**PROPOSED WORK**
**Water Supply**
**Sewers, Waste Disposal**
**Bridges**
**Streets & Roads**
**Earthwork, Waterways**
**Public Buildings**
**Mass Housing**
**Commercial Buildings**
**Industrial Buildings**
**Unclassified**

#### *In These Stages*

**PROPOSED WORK: Before and including appointment of engineers or architects.**
**BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.**

**SOON LETS CONTRACT: SLC**

**LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.**

**CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.**

**CD dates shown are of Construction Daily Issue in which last previous report was published.**
**OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.**

#### *Symbols and Abbreviations Include:*

| | |
|---|---|
| † | Federal Government |
| ▲ | Project of $1,000,000 or over. |
| ENR | Engineering News-Record |
| CD | Construction Daily |

**For additional reports see Construction Daily.**

▲ **Hoechst-Uhde Corp. (Farbwerke Hoechst AG West Germany)**, 350 5th Ave., New York, N. Y., CA Est. **$10,000,000**, 2 story PLANT with electrolytic cells to produce caustic soda, potash and chlorine, NIAGARA FALLS, N. Y. Hooker Chemical Corp., Box 344, Niagara Falls, N. Y.

▲ **M. Melnick & Co., Inc.**, 225 Willow Ave., New York 54, N. Y., CA **$1,109,000**, general contract addn. to and modernization and conversion of PUBLIC SCHOOL 93, Forest Ave. and Madison St., Queens Boro, RIDGEWOOD, N. Y. Supt. Design, Constr. & Physical Plant, Bureau Constr., 4th Fl., 42-15 Crescent St., Long Island City 1, N. Y. Tito Di Vincenzo, 135 E. 65th St., New York, N. Y., archt. Bids Jan. 13. CD 1/18, under LB.

▲ **B. J. Lucarelli Co., Inc.**, 1100 McCarter Highway, Newark, N. J., CA **$1,515,000**, general contract HIGH SCHOOL, CALDWELL, N. J. West Essex Regional High School Dist., Caldwell, N. J. Bids Dec. 15. CD 1/11, under LB.

## SOUTH

### HEAVY CONSTRUCTION—BA

▲ **Fla., Pensacola**—MARINE TERMINAL—BA 2/19—Pensacola Port Auth., City Hall, marine terminal. $3,500,000. Plans deposit $50. Frederic R. Harris, Inc., 27 William St., New York, N. Y., engr. CD 4/3.

▲† **Kentucky**—BA About 2/24—U.S. Eng., P.O. Box 59, Louisville, Zone 1, Outlet Works No. 2, Barren River Reservoir, Barren River, CIVENG-15-029-60-20. $2,000,000. Plans deposit $8. CD 9/15.

▲† **Miss., Meridian**—BACHELOR OFFICERS' QUARTERS, etc., BA 2/25—Dist P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C., bachelor officers' quarters with mess, Naval Auxiliary Air Station, Spec. No. 27630/59. Extended date with revised plans. CD 1/5.

### BUILDINGS—BA

▲ **La., Baton Rouge**—ADMINISTRATION BLDG.—BA 2/25—State Dpt. Labor, Div. Employment, 4 story administration bldg. $1,800,000. Plans deposit $100. LeBlanc & Deen, 4747 Convention St., archts.

▲ **Ga., Marietta**—LABORATORY, etc.—BA 3/1—University System of Georgia Building Auth., 244 Washington St. S.W., Atlanta, classroom, laboratory, electrical bldg., Southern Technical Institute, $2,000,000. Plans deposit $100. William R. Tapp, Jr., and David Savini Assocs., 110 Austin Ave., archts. CD 1/22.

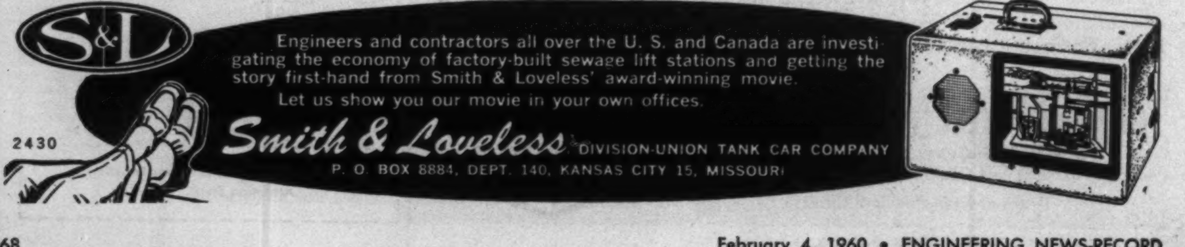
### BUILDINGS—SLC

▲ **Fla., St. Petersburg**—APARTMENT—Nationwide Development Corp., 1025 Kane Con Bay Harbor Isle, Miami Beach, soon lets contract 10 story, 200 unit Carlton Towers Apartment, 5 Ave. S. and 2 St., $4,000,000. Wiener & Dutkin, 1400 NE 123 St., Miami, archts. CD 1/12.

### HEAVY CONSTRUCTION—LB & CA

▲† **James P. Cross**, Box 827, New Iberia, La., CA **$1,040,060**, Levee 35B, Levee 38, Section 3, (E and W) required islands along L-38, Section 2, and L-35B; S-38; S-13A modification, culverts and spillway, Central and Southern Florida Flood Control Project, CIVENG-08-123-60-24, FLORIDA. U. S. Eng., P.O. Box 4970, Jacksonville 1, Fla. Bids Jan. 5, awarded Jan. 20. CD 1/13, under LB.

▲† **Mid-State Paving Co.**, Box 1454, Meridian, Miss., CA **$1,277,030**, grading, grav. base, box type bridge, etc. from Utica-Regantown Rd. to Big Bayou Pierre, Natchez Trace Parkway, MISSISSIPPI and TENNESSEE. Bureau P. Rds., Dpt. Commerce, First National Bank Bldg., Florence, Ala. Bids Jan. 7. CD 1/12, under LB.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### BUILDINGS—LB & CA

▲ **M. R. Harrison Constr. Co.**, 1000 N. W. 54 St., Miami, Fla., LB **$1,378,000**, DISTRIBUTING HOUSE BLDG., N. W. 183 St. between N. W. Miami Court and NW 2 Ave., MIAMI, FLA. Western Electric Co., c/o Weed-Johnson Assocs., archts., 550 Brickell Ave., Miami, Fla. CD 11/25.

▲ **J. A. Jones Constr. Co.**, 1507 S. Rendon, New Orleans, La., LB **$1,633,000**, COFFEE PLANT, NEW ORLEANS, LA. J. A. Folger & Co., 330 W 8th, Kansas City, Mo. Bids Jan. 20. CD 1/8.

▲ **Crane Constr. Co.**, 201 E. Walton St., Chicago, Ill., CA **$8,109,300**, 28 story OFFICE and COMMERCIAL BLDG., NEW ORLEANS, LA. Owner, c/o Cushman & Wakefield, mgrs., 232 Baronne St., New Orleans, La. Shaw, Metz & Assn., 208 S. LaSalle St., Chicago, Ill., archts.-engrs. Bids Dec. 18, awarded Jan. 18. CD 12/22, under LB under J. J. Mack, as owner.

## MIDDLE WEST

### HEAVY CONSTRUCTION—LB & CA

▲† **Mayfair Constr. Co.**, 5660 N. Jersey Ave., Chicago, Ill., LB **$1,242,700**, airport hangar, sewers, water, electric, O'Hare Field, Park Ridge, ENG-11-032-60-24, CHICAGO, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Jan. 20. CD 1/15.

▲ **Santucci Constr. Co.**, 5115 Church St., Skokie, Ill., CA **$1,990,000**, revetment wall for Puetz Rd. Sewage Treatment Plant, Oak Creek, MILWAUKEE, WIS. Sewerage Comn. of the City of Milwaukee, P. O. Box 2079, Milwaukee 1, Wis. Bids Dec. 15, awarded Jan. 18. CD 12/21, under LB.

### BUILDINGS—LB & CA

▲ **Epstein Constr. Co.**, 4294 Mayfield Rd., South Euclid, O., CA Est. **$3,000,000**, 164 frame RANCH HOMES, Smith Rd. and Susan Dr., BROOKPARK, O. Planned Builders, Inc., 4294 Mayfield Rd., South Euclid, O.

▲ **Roy C. Clark, Inc.**, 804 E. Chicago Ave., East Chicago, Ind., CA **$1,250,000**, 200,000 sq. ft., concrete PARKING GARAGE, Sibley St., HAMMOND, IND. Triangle Parking Corp., c/o De Leuw Cather Co., engr., 150 N. Wacker Dr., Chicago 6, Ill. Bids Dec. 23, awarded Jan. 18. CD 1/15, under LB.

▲ **S. N. Nielsen Co.**, 3059 W. Augusta Blvd., Chicago, Ill., CA **$1,587,000**, 140 units HOUSING, Proj. 2-38, CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago 5, Ill., Bids Dec. 29, awarded Jan. 20. CD 12/31, under LB.

## MISSISSIPPI TO ROCKIES

### HEAVY CONSTRUCTION—LB & CA

▲ **Fisher Constr. Co.**, Box 6325, Houston, Tex. LB **$1,517,050**, est. $1,000,000, Contract No. 2, sewage disposal plant, PORT ARTHUR, TEX. City, City Hall, Port Arthur, Tex. Bids Jan. 13. CD 12/24; **Trotti & Thompson, Inc.**, Box 70, Beaumont, Tex. LB **$1,147,519**, est. up to $500,000, Contract No. 1, sewage conveyance system, various sized pipes (Port Arthur, Tex.).

▲ **MONTANA**—State Hy. Comm., Helena,

Mont.—**Peter Kiewit Sons' Co.**, 501 St. John's Ave., Billings, Mont., CA **$2,657,498**, (22 bidders), surf., pave and constr. 214½ ft. concrete interchange and grade, surf., drain 0.57 mi. Forsyth-Miles City road, Custer Co.

Mont.—**Zook Bros. Constr. Co.**, Big Fork, Mont., CA **$1,096,572**, grade, surf., seal 6.686 mi. Superior east and west road, Mineral Co.

Mont.—**Union Constr. Co., Inc.**, 2805 Floral Blvd., Butte, Mont., CA **$295,563**, grade, gravel surf. 5.092 mi. Jackson-Dillon Rd., Beaverhead Co.

Mont.—**Dean R. Rounds**, 1110 W. Main St., Rapid City, S. D., CA **$122,256**, grade, aggregate surf. 5.86 mi. Knobs-Webster-Baker Rd., Fallon Co.

Mont.—**Schye & Sullivan**, White Sulphur Springs, Mont. CA **$137,769**, grade surface treat. 2.495 mi. Froid west road, and 110 ft. steel and concrete bridge over Smoke Creek, Roosevelt Co.

Mont.—**Union Constr. Co.**, Missoula, Mont., CA **$192,850**, grade, surf., seal 3.714 mi. Hamilton southeast road, Ravalli Co.

Mont.—**G. E. Marshall**, 201 Main St., Roundup, Mont., CA **$319,270**, grade, surf., drain 3.788 mi. Glasgow northwest road, Valley Co., CD 12/2.

Mont.—**Hilde Constr. Co.**, 3810 7 Ave. No., Great Falls, Mont., CA **$199,662**, grade, surf., drain, lengthen and widn. 200 ft. timber bridge on 4.224 mi. Stanford-Geraldine Rd., Chouteau and Fergus Counties. Grand total $5,021,440. Bids Jan. 20, awarded Jan. 21. CD 1/12.

### BUILDINGS—LB & CA

▲ **Fruin-Colnon Contg. Co.**, 1706 Olive St., St. Louis, Mo., CA Est. **$1,000,000**, 1 story, 120,000 sq. ft. MANUFACTURING and WAREHOUSE, 7,500 sq. ft. OFFICES, O'FALLON, MO. Drug Package, Inc., 2419 Glasgow Ave., St. Louis 6, Mo.

▲ **Dick N. Richards**, 11023 Tibbs Ave., Dallas, Tex., CA Est. **$1,000,000**, 1 story, masonry, concrete 120 unit APARTMENTS, swimming pool, 8th Ave., just off Pennsylvania Ave., FORT WORTH, TEX. Hutcheson-Richards Enterprises, c/o E. A. Sibley, archt., 3641 Ingleside Dr., Dallas, Tex.

▲ **American Bridge Div. of U. S. Steel Corp.**, Gulf Bldg., Houston, Tex., CA **$1,250,000**, structural steel for 26 story HOTEL-OFFICE, HOUSTON, TEX. Lincoln Liberty Life Insurance Co., 1508 Milam St., Houston, Tex. CD 1/8.

▲ **T. C. Crist, Inc.**, 3415 Milton St., Dallas, Tex., CA approx. **$2,000,000**, 1 story, 340,000 sq. ft., masonry, BOAT MANUFACTURING PLANT and OFFICE, PLANO, TEX. Lone Star Boat Co., 1930 E. Main St., Grand Prairie, Tex. Jacob E. Anderson, 610 Thomas Bldg., Dallas, archt. CD 1/6.

▲ **Western Knapp Engineering Co.**, 650 5 St., San Francisco, Calif., CA **$1,000,000**, 200 ton per day URANIUM MILL expansion, CANON CITY, COLO. Cotter Corp., 531 Main St., Canon City, Colo. CD 7/22.

## FAR WEST

### BUILDINGS—BA

▲ **Calif., Los Angeles**—CENTRAL BOILER, etc.—BA 2/17—Bd. Supervs. Los Angeles Co., 501 Hall of Records, central boiler and refrigeration plant at Mira Loma Segregation Hospital, Lancaster. $1,490,000. CD 11/11/58.

### BUILDINGS—SLC

▲ **Calif., Whittier**—DEPARTMENT STORE—New York Life Insurance Co., at Broadway Department Store, 401 South Broadway, Los Angeles, soon lets contract 130,000 sq. ft. concrete frame Broadway Department Store. $6,000,000. Charles Luckman & Assocs., 9920 Sunset Blvd., Los Angeles, archts. CD 1/5.

### HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

**Gibbons & Reed**, 825 West 9th North St., Salt Lake City, Utah, CA **$4,065,797**, relocation 5.1 mi. Hy. around site of proposed Whiskeytown Reservoir, incl. 874 ft. bridge over arm of future reservoir, Shasta Co. Bids Jan. 6. CD 1/11, under LB.

### BUILDINGS—LB & CA

▲ **Tellepsen Petro-Chemical Constructors**, 1710 Telephone Rd., Houston, Tex., CA Approx. **$5,000,000** ASBESTOS PLANT, COPPEROPOLIS, CALIF. Jefferson Lake Sulphur Co., Whitney Blvd., New Orleans, La. Tellepsen Petro-Chemical Constructors, 1710 Telephone Rd., Houston, Tex., and Kilborn Engineering, Ltd., 36 Parklawn, Toronto, Canada,, engrs. CD 12/4.

▲ **Biltwell Constr. Co.**, 4745 Geary St., San Francisco, Calif., Owner Builds, **$3,000,000**, 10 story, rein.-con. APARTMENT, incl. 2-floor parking, Washington and Buchanan Sts., SAN FRANCISCO, CALIF. John G. Clay, 305 Grant Ave., San Francisco, Calif., archt.

▲ **Swartout Constr. Co.**, 12654 Metate Lane, Poway, Calif., CA **$1,979,570**, 96 DWELLINGS, Tustin Hills Tract, POWAY, CALIF. B & D Properties, Inc., 2405 S. Bristol, Santa Ana, Calif.

▲ **Twaits-Wittenberg**, 507 S. Bixel St., Los Angeles, Calif., CA **$1,710,000** (6 bidders), 1,000,000 sq. ft. MANUFACTURING and RESEARCH, 2525 West 190th St., TORRANCE, CALIF. Garrett Corp., 9851 Sepulveda Blvd., Los Angeles, Calif. Bids Dec. 15 CD 12/7.

## CANADA

### BUILDINGS—BA

▲ **Ont., Toronto**—SCHOOL—BA 2/11—Bd. Educ., 155 College St., Lansdowne Senior Public School. $1,720,000. Plans deposit $50. Extended date. CD 1/12.

### HEAVY CONSTRUCTION—LB & CA

▲ **Collucci Constr. Co. Ltd.**, 3433 Bathurst St., Toronto, Ont., LB **$170,797**, (6 bidders) sanitary trunk sewer, East Don extension, incl. 3,910 ft. 42 in. sewer in open cut, Finch Ave.: LB **$134,061**, (7 bidders) sanitary trunk sewer, West Highland Creek, incl. 3,502 ft. 42 in. sewer in tunnel and open cut from Hy. 401 to Sheppard Ave. E. TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont.

**Robert McAlpine Ltd.**, 2249 Yonge St., Toronto, Ont., LB **$2,077,131** (10 bidders), blower and heating bldg., sewage treatment plant, Ashbridges Bay (Toronto, Ont.)

### BUILDINGS—LB & CA

▲ **Taylor Woodrow (Canada) Ltd.**, 606 Jarvis St., Toronto, Ont., CA Est. **$5,500,000**, OFFICE, OAKVILLE, ONT. Ford Motor Co. of Canada Ltd., Oakville, Ont. CD 12/29.

## PUERTO RICO

### BUILDINGS—LB & CA

▲ **Brown & Root Caribe, Inc.**, Pl Degatau, Ponce, Puerto Rico CA **$2,236,000**, est. $2,250,000 Costa Sur THERMO ELECTRIC PLANT, Penuelas, PUERTO RICO. Puerto Rico Water Resources Authority, Box 4265, Santurce, Puerto Rico. Bids Jan. 5. CD 8/30/57 under Unclassified.

## AMERICANS ABROAD

### BUILDINGS—LB & CA

▲ **M. W. Kellogg Co.**, 711 3rd Ave., New York, N. Y., U.S.A., CA Est. **$25,650,000**, REFINERY, crude distillation unit, naphtha unifiner, platformer, distillation hydrotreater and fluid catalytic cracker, IZMIT, TURKEY. Istanbul Petrol Rafinerisi A.S. (California Texas Oil Co., 380 Madison Ave., New York, N. Y., U.S.A., Standard Oil of California, 225 Bush St., San Francisco, Calif., U.S.A., and Turkiye Petroleri, A.O., Government of Turkey, Istanbul, Turkey). CD 11/9.

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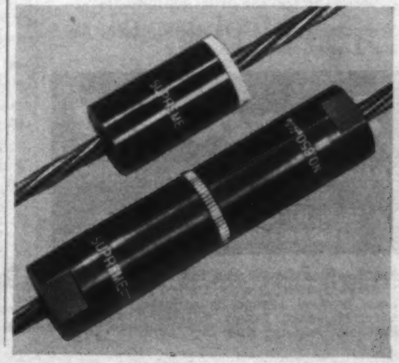

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## PROPOSED PROJECTS

### WATER SUPPLY

▲ **N. Y., Tonawanda**—Town, Town Hall, water lines, filter beds, grid sys. and addn. to Sheridan Rd. Pump Station. **$2,500,000.** Nussbaumer, Clarke & Velzy, Two Mile Creek Rd., consult. engrs. CD 8/27/56.

▲ **Tex., Dallas**—City, City Hall, 45 mi. water supply line, Wills Point to Dallas **$12,794,000;** water treatment plant near Forney **$4,469,000,** Forrest & Cotton, Vaughn Bldg., Dallas, consult. engrs. 20 m.g. reservoir, **$400,000,** pumping station, **$611,780,** near Addison. A. J. Boynton & Co., Fidelity Union Life Co., consult. engrs. CD 12/5/58.

### SEWERS, WASTE DISPOSAL

▲ **O., Springfield**—City, City Hall, sewage treatment plant. **$2,250,000.** Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., consult. engrs. Bids in March. CD 5/4/54.

### STREETS AND ROADS

▲ **Conn., Milford**—City, City Hall, Broad St. Bypass, **$1,560,000;** circumferential route East Shore Area, **$170,000.**

▲ **NEW YORK**—State Dtp. P. Wks., State Office Bldg., Albany,

**Montgomery Co.**—2.48 mi. North-South Arterial in Amsterdam from south side of Mohawk River to Prospect St. together with service roads and channelized connection at north end., FAI Proj. **$1,500,000.**

▲ **PENNSYLVANIA**—State Hy. Dpt., 405 North Office Bldg., Harrisburg,

**Lancaster Co.**—completing 8 mi. Lancaster By-Pass between Rte. 230 north of city and Rte. 50 west of city, Lancaster. **$6,000,000.** Yule, Stricklen, Jordan & McNee, Cedar Cliff Drive, Camp Hill, consult. engrs. W. R. B. Froehlich, c/o owner, ch. engr.

### EARTHWORK, WATERWAYS

▲† **Wisconsin**—Vernon Co., watershed project, incl. 8 dams, **$1,531,705.** CD 9/11/58.

### AIRPORTS

▲ **Colo., Denver**—TERMINAL—City and County of Denver, City and County Bldg., plans by Paul Reddy, 105 Fillmore St., terminal bldg., Stapleton Field. **$3,500,000.** CD 5/22.

▲† **Colo., Denver** — AIR CENTER — Federal Aviation Agency, 1711 New York Ave. N.W., Wash., D. C., air center bldg. for traffic control-radar facilities. **$1,700,000.**

▲† **Colo., Grand Junction**—AIR CENTER—Federal Aviation Agency, 1711 New York Ave. N.W., Wash., D. C., air center bldg. for traffic control, long range radar facility. Approx. **$1,700,000.**

▲† **Ga., Marietta**—COMBAT OPERATION CENTER—Dpt. Air Force, The Pentagon Bldg., Wash. 25, D. C., will not construct underground combat operation center (SAGE) Kennesaw Mountain, near here. Dpt. Interior refused site in National Park. **$15,000,000.** Project abandoned. CD 10/5.

▲ **Tenn., Nashville**—TAXIWAY, etc.—City, City Hall, taxiway runway extensions, grading and paving at Berry Field, **$1,700,000.** Consoer, Townsend & Associates, 360 E. Grand Ave., Chicago, Ill., consult. engrs. CD 11/20.

### FOREIGN

▲ **India, New Delhi**—TIRE and TUBE PLANT—Goodyear Tire & Rubber Co., 1144 East Market St., Akron, O., U.S.A., tire and tube plant, Agra Rd., 20 mi. south of here. **$12,000,000.**

▲ **United Arab Republic,** Egypt-Suez Canal Authority, Cairo, widening, deepening Suez Canal. **$107,900,000.**

### PUBLIC BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—State of Alabama, Montgomery, will vote Feb. 16 on amendment to build 100-bed hospital for mentally ill to be part of Alabama Medical Center, **$3,000,000.** (Correction—location). CD 1/14, under Ala., Mobile.

▲† **Alaska**—ELECTRONIC AIDS, etc.—17th Coast Guard Dist., Box 2631, Juneau, three electronic aids-to-navigation stations, **$2,000,000** each; fourth station addn. westward section and Aleutian Islands, **$500,000.** Bids in February.

▲ **Ark., Pine Bluff**—DORMITORIES, etc.—Arkansas Agricultural, Mechanical & Normal College, dormitories, **$2,100,000;** and faculty apartments, **$591,060.** Constr. 1960 or 1961.

▲ **Calif., Bakersfield**—SCHOOLS—Kern Co. Union High School & Junior College Dist., 2000 24th St., Bakersfield, **$5,870,000** bond election Feb. 9, schools. Bonds May 6, 1958 defeated. CD 3/26/58.

▲ **Ga., Marietta**—TECHNOLOGY BLDGS.—University System of Georgia Building Auth., 244 Washington St. S.W., Atlanta, plans by William R. Tapp, Jr. & David Savini, 110 Austin Ave., Southern Technical Institute Technology bldgs. **$2,000,000.** CD 4/22, under commercial buildings.

▲ **Ky., Louisville**—DORMITORIES—University of Louisville, 3rd and Shipp Sts., sketches by Hartstern, Louis & Henry, McDowell Bldg., Zone 2, 3 dormitories. **$3,000,000.**

▲ **Mont., Great Falls**—SCHOOLS—School Dist. No. 1 voted **$2,835,303** bonds, 4 grade schools, CD 4/13; and $214,697 bonds, elementary school, **$728,000.** CD 7/15.

▲† **Neb., Omaha**—CAPEHART HOUSING—Procurement Office, Offutt Air Force Base, plans by Henningson, Durham & Richardson, 252 Aquilla Court, 400-unit Capehart Housing, Offutt Air Force Base (No. 3), **$6,600,000.**

▲ **N. J., Atlantic City**—GARAGE, etc.—City Comn., City Hall, plans by Holden-Egan, Wilson & Corser, 630 3 Ave., New York, N. Y., 1 story municipal garage and workshop. **$1,500,000.** Throop & Feiden, 207 E. 37 St., New York, N. Y., consult. engrs. CD 2/14/56.

▲ **N. J., Franklin Twp. (Middlebush P.O.)** — HIGH SCHOOL—Bd. Educ., Franklin Twp., voted referendum, bonds and project Jan. 14, high school, **$2,250,000.** Micklewright & Mountford, E. Stuyvesant St., Trenton, archts. CD 9/30.

▲ **N. J., Trenton**—STATE AGRICULTURE—New Jersey Dpt. Treasury, Division Purchases & Property, State House, plans by Albert A. Kauffmann, 252 N. Broad St., Elizabeth, State Agriculture Bldg., **$2,500,000.** Theodore Kauffeld, 36 Commerce St., Newark, consult. engr. CD 11/16.

▲ **N. Y., Brooklyn**—SCHOOL—Bureau Constr., Bd. Educ., 42-75 Crescent St., Long Island City, plans by Samuel Paul & Seymour Jarmul, 89-51 164th St., Jamaica, P.S. 236 addn. **$1,500,000.** CD 2/8/45.

▲ **N. Y., Massapequa**—SCHOOL—Bd. Educ. Union Free School Dist. 23, voted referendum Jan. 16, Junior High School, Carman Rd. **$5,545,000.** CD 12/24.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-75 Crescent St., Long Island City, plans by Pomerance & Breines, 630 3rd Ave., P.S. 181, Allen and Rivington Sts. **$2,500,000.** CD 5/27/57.

▲ **N. Y., New York**—MEDICAL CENTER—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Ferrenz & Taylor, 1451 Broadway, Zone 36, Proj. No. HO-225, Harlem Medical Center. **$24,000,000.** Anthony J. DePace, 151 W. 46th St., Zone 19, assoc. archt.

▲ **N. Y., North Tonawanda**—SCHOOL—Bd. Educ., Town Hall, voted bonds Jan. 21, high school. **$3,800,000.**

▲ **N. C., Chapel Hill**—COLISEUM—Dpt. Educ., State of North Carolina, Capitol Bldg., Raleigh, coliseum, University of North Carolina. **$5,000,000.**

▲ **N. C., Greensboro**—SCHOOL—Greensboro City School Bd., High School, **$1,500,000;** Junior High School, **$1,000,000;** Elementary School, **$820,000.**

▲ **O., Berea**—HIGH SCHOOL—Bd. Educ., 390 Fair St., $2,900,000 bond election May 3, high school **$3,800,000.** CD 11/9/56.

▲ **O., Cincinnati**—HOSPITAL—City, City Hall, General Hospital addns. **$16,000,000.**

▲ **O., Columbus**—SCHOOLS—Bd. Educ., Southwestern School Dist., bond election May 3, schools, high school addns., Grove City. **$2,500,000.**

▲ **O., Columbus**—LIGHT PLANT—City, City Hall, municipal light plant addn. **$4,000,000.**

▲ **O., Columbus**—APARTMENTS—Columbus Metropolitan Housing Authority, 425 W. Rich St., plans by Wright & Gilfillen, 749 Northwest Blvd., 10 story, 116 unit and two 4-unit brick, steel apartments, **$1,500,000.** CD 11/19/52.

▲ **O., Wooster**—SCHOOLS—Bd. Educ., bond election May 3, schools. **$2,980,000.** CD 11/5/54.

▲ **Tex., Houston**—COURTHOUSE—Harris Co., Comrs. Court, Courthouse, plans by Wyatt C. Hedrick, archt.-consultant engr., 5201 Fannin St., courthouse annex. **$15,000,000.** CD 2/2/56.

▲ **Utah, Salt Lake City**—SCHOOL—Granite School Dist., 3212 S. State, plans by Dean L. Gustavson Assoc., 15 No. West Temple, Salt Lake City, Northeast high school, 3760 S. west of Wasatch Blvd. **$1,500,000-$2,000,000.** CD 5/8.

▲ **Va., Richmond**—OFFICES—State Unemployment Compensation Comn., 7th and Main Sts., Offices for Unemployment Compensation Comn. **$1,500,000.**

▲ **Va., Richmond**—OFFICES—State, State Office Bldg., offices for Health Dpt. **$3,900,000.** CD 10/22/45.

▲ **Wash., Seattle**—LIBRARY—University of Washington, 15 Ave. N.E. and E. 40 St., Zone 5, plans by Bindon & Wright, Norton Bldg., Zone 4, 7 story, 125,000 sq. ft. library addn. **$3,000,000.** Bids this year. CD 11/18/58.

▲ **Wash., Vancouver**—SCHOOL—School Dist. 37, $3,000,000 bond election Mar. 8, Junior-Senior High School, **$2,000,000;** Hudson's Bay High School addn., **$500,000;** elementary school in McLoughlin Heights near MacArthur Blvd. and Andresen Rd. **$550,000.** CD 6/8.

▲ **Que., Thetford Mines**—COURT HOUSE, etc.—Dpt. P. Wks., Parliament Bldgs., Quebec City, 250,000 sq. ft. courthouse and jail, St. Alphonse St. W. **$3,000,000.**

### COMMERCIAL BUILDINGS

▲ **Calif., Belmont**—HOME SUBDIVISION—Parkside Development Co., 1885 S. Norfolk St., San Mateo, 80-home subdivision near Ralston Ave. **$2,000,000.** Lawrence G. Brian, 1526 Main St., Redwood City, consult. engr.

▲ **Col[illegible] Denver**—COMMUNITY CENTER—Jewish Com[illegible] Center, 1475 Williams, plans by Nat S [illegible], 4950 E. Evans Ave., Denver, and Robert M. Morris, 330 W. Asbury, Denver, 1 and 2 story, 75,000 sq. ft. Jewish community center recreation facilities, E. Alameda and South Dahlia, **$1,500,000.** Applications for prequalification from interested bidders due Jan. 22. CD 9/10.

▲ **Conn., East Hartford**—SHOPPING PLAZA—East Hartford Plaza Corp., 1 Webster St., Hartford, plans by Philip J. DiCorcia & Assocs., 376 W. Middle Tpk., Manchester, 200,000 sq. ft. shopping center, Main St. **$2,000,000.**

▲ **D. C., Wash.**—CHURCH CENTER—National Presbyterian Church, Connecticut Ave. and N St. N. W., plans by Edward Stone, 38 E. 65 St., New York 21, N. Y., National Presbyterian Church center, Nebraska and Massachusetts Aves., N. W. **$10,000,000.** CD 8/28.

▲ **Fla., Miami**—HOSPITAL—Diocese of Miami, 6301 Biscayne Bay Blvd., plans by Alfred D. Reid Assocs., 324 4 Ave., Pittsburgh 22, Pa., hospital, Port Charlotte. **$2,500,000.**

▲ **Fla., St. Petersburg**—OFFICE—Citizens Plaza Corp., c/o Florida Builders, 700 43 St. S., plans by William B. Harvard and Blanchard Jolly, 2714 9 St. N., St. Petersburg, 12 story, 146,000 sq. ft. office, Central Plaza, **$3,000,000.**

▲ **Ga., Atlanta**—SHOPPING CENTER—Dolphin Homes Realty Corp., 2653 Connally Dr., plans by Tomberlin-Sheetz, 1429 Peachtree St. N. E., and Hugh Marshal, 1107 W. Rugby Ave., Atlanta, Ben Hiltown Shopping Center, moving sidewalk, Ben Hill, **$21,000,000.**

▲ **Ga., Gainesville**—HOSPITAL—Hall Co. Hospital Auth., 743 E. Spring St., plans by Bothwell & Nash, 206 Roswell St., Marietta, hospital addn. **$2,800,000.**

▲ **Ill., Streator** — HOSPITAL — St. Mary's Hospital, Streator, plans by E. H. Berners, c/o Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, Wis., hospital addn. **$4,500,000.**

▲ **Ky., Louisville**—HOMES—A. L. Dougherty, 20 N. Meridian St., Indianapolis 4, Ind., 2,000 Anchorage Meadows homes, 648 acres, Westport Rd. near Oldham County Line, near here. Over **$2,000,000.**

▲ **Md., Glen Burnie**—HOSPITAL—North Arundel Hospital Assoc., 110 Crain Hy. N., plans by Wheeler, Bonn & Shockey, 12 N. Crain Hy., 4 story, 245x386 ft., brick, steel, concrete, concrete block hospital, near here. **$3,000,000.** Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore, Zone 2, mechanical engrs. Perry, Lamprecht & Rickert, 2443 N. Calvert St., Baltimore, Zone 2, structural engrs. CD 1/31/57, under Public Buildings.

▲ **Mich., Monroe**—HOSPITAL—Mercy Hospital plans by Maguolo & Quick, 4908 Delmar, St. Louis, Mo., 200-bed hospital addn. **$3,000,000.** CD 8/13.

▲ **N. J., Clifton**—APARTMENTS—John Kriz & Geo. Fuller, 57 Union Place, Summit, plans by Bernard Hersh, 12-45 River Rd., Fair Lawn, two 12 story garden apartments, Hepburn Rd. **$5,750,000.**

▲ **N. J., Clifton**—APARTMENT—Manor Builders, Hillside, plans by Max Ungarleider, 66 Court St., Brooklyn, N. Y., will not construct apartment, Grove St. and Rte. 3, **$4,500,000.** Project abandoned. CD 7/21.

▲ **N. J., Jersey City**—MOTEL—Robert Huyot, 35 E. 76 St., New York, N. Y., plans by Carlos B. Schoeppel, 35 E. 76 St., New York, N. Y., motel, Henderson and Grove Sts. **$1,500,000.** Target for completion April 1, 1961.

▲ **N. Y., Astoria**—SCHOOL—Diocese of Brooklyn, 191 Joralemon St., Brooklyn, Zone 2, plans by Stickle & Assocs., 2422 Prospect Ave., Cleveland 15, O. Mater Christi Diocesan High School, Crescent St., 27th St. and 21st Ave. **$5,000,000.**

▲ **N. Y., Bayside**—SCHOOL—Diocese of Brooklyn, 191 Joralemon St., Brooklyn, Zone 2, Bishop Edmund J. Reilly High School, Long Island Expressway and Francis Lewis Blvd. **$5,000,000.**

▲ **N. Y., Brooklyn**—SCHOOL—Diocese of Brooklyn, 191 Joralemon St., Zone 2, Nazareth High School, Ditmas Ave. and Clarendon Rd., E. 57th and 58th Sts. **$5,000,000.**

▲ **N. Y., Brooklyn**—SCHOOL—Diocese of Brooklyn, 191 Joralemon St., Zone 2, plans by Delany-Nelson, 101 Park Ave., New York. Bishop Kearney Diocesan High School, Bay Parkway and 60th St. **$5,000,000.** V. L. Falotico & Assocs., 26 Court St., engrs.

▲ **N. Y., New York** — GYMNASIUM, etc. — Columbia University, 116 St. and Broadway, 3 story gymnasium and recreation center with swimming pool, Morningside Ave. **$6,000,000.**

▲ **N. Y., New York**—OFFICE, etc.—Arnold T. Milton & Aaron Rabinowitz, 511 5th Ave., plans by Emery Roth & Sons, 400 Park Ave., 19 story office and showroom bldg., 107-113 West 39th St. **$5,000,000.**

▲ **O., Dayton**—OFFICE—Consolidated Corporations, Inc., 308 W. 1st St., plans by Walker, Norwick & Assocs., archts.-engrs., 12 W. Monument St., 10 story and 2 story annex office, southwest corner W. 3rd and Wilkinson Sts. to be known as Toulmin Plaza and Toulmin Towers, **$2,000,000.**

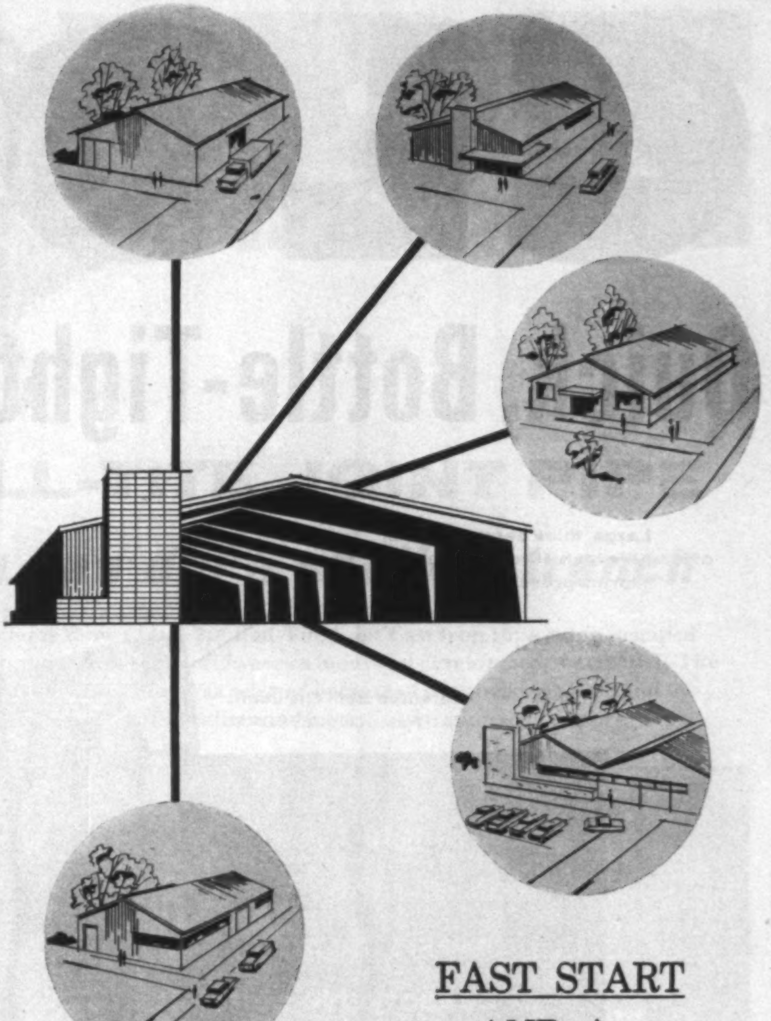
▲ **Pa., Phila.**—CHEMISTRY and POWER PLANT—Temple University, 1900 Park Ave., chemistry bldg. **$5,000,000; power plant, Over $500,000.** CD 12/17.

▲ **Pa., Phila.**—COMMUNICATIONS SCHOOL—University of Pennsylvania, 3025 Walnut St., plans by Alfred Easton Poor, 400 Park Ave., New York, N. Y. Annenberg School of Communications, **$1,800,000.** Severud-Elstad & Krueger, 415 Lexington Ave., New York, N. Y., consult. engrs. CD 5/18.

▲ **S. C., Charleston**—MOTEL—James and Santo Sottile, Fort Sumter Hotel, 250 unit motel. **$2,500,000.**

▲ **Tex., Dallas**—HIGH SCHOOL—Catholic Church, Catholic Diocese of Dallas & Ft. Worth, 2122 Kidwell St., plans by Grayson Gill, 1913 San Jacinto St., high school, Peavy and Ferguson Rds., East Dallas. **$2,000,000.** CD 10/15.

(Continued on page 74)



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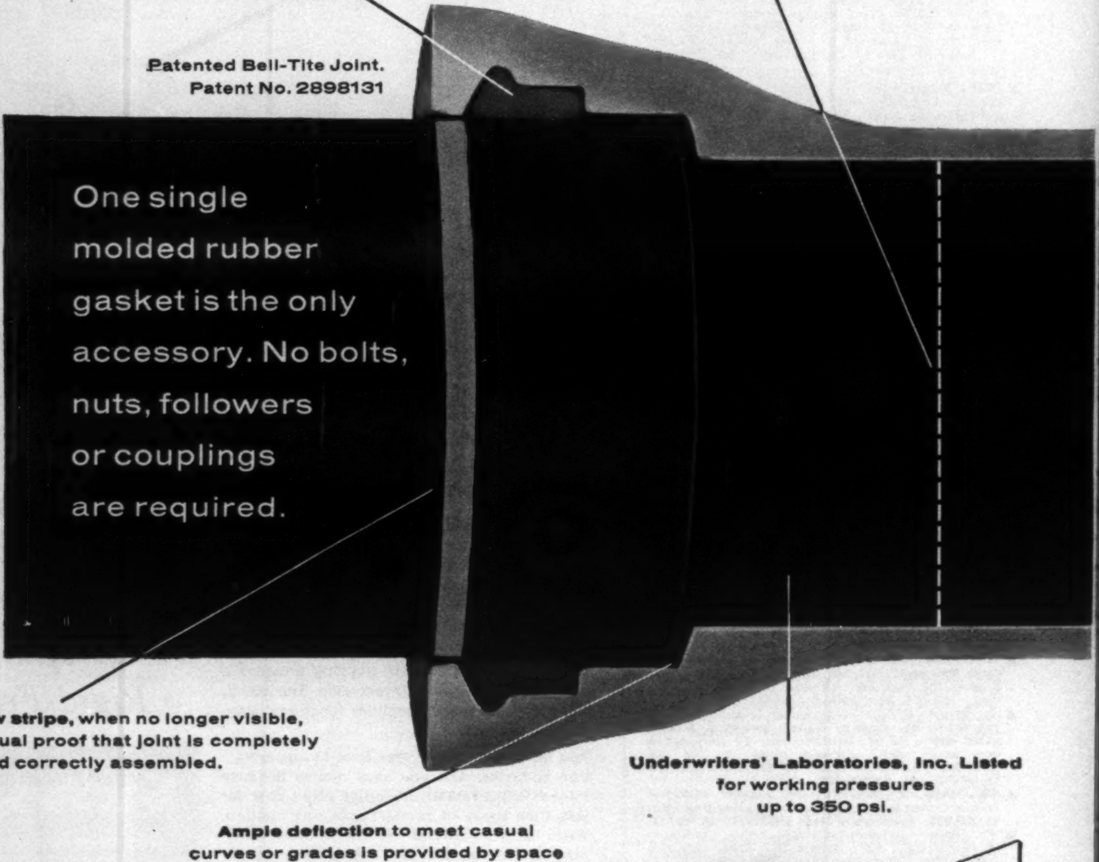

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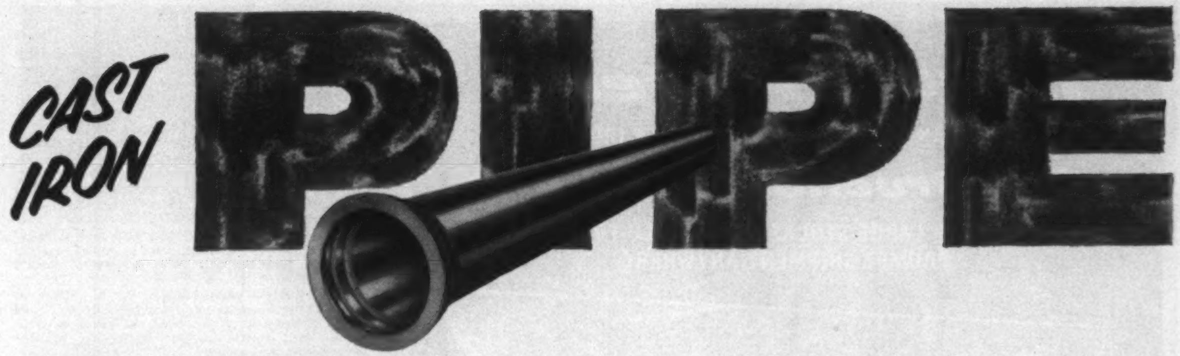

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Reading, Mass.

(Continued from page 71)

▲ **Tex., Dallas** — ENCLOSED MALL — Corporation, c/o G. C. Ledyard, Jr., 4700 Abbott St., 35 store enclosed mall, air conditioned shopping center, Northwest Hy., **$6,000,000**; 3,500 auto and area, hard paving, **$125,000**; site area earthwork, **$66,000**; lighting system, **$100,000.**

▲ **Tex., Weslaco**—RETIREMENT HOME—McAllen Dist. of the Methodist Church, c/o 1st Methodist Church, McAllen, retirement home, 39-acre tract. **$3,000,000.**

▲ **Va., Richmond**—APARTMENT—Owner, c/o T. T. Hyde III, 912 E. Main St., plans by Marcellus Wright, 100 E. Main St., 14 story, 156-unit apartment, 132 underground parking. **$7,000,000.** CD 12/29.

▲ **Vt., Burlington**—SHOPPING CENTER—Antonio Pomerieau, 117 De Forest Heights, plans by Julian W. Goodrich, 930 Shelburne Rd., South Burlington, shopping center, Shelburne Rd. **$1,500,000.** Constr. 1960.

▲ **Wash., Kirkland**—APARTMENT—H. K. Schroeder, et al, 11204 Roosevelt Way, Seattle, Zone 33, plans by R. G. Ogden & D. W. Vicary & Associates, 2307 Rainier Ave., Seattle, 10 story apartment. **$1,500,000.** Constr. this summer.

▲ **B. C., Westview**—SHOPPING CENTER—J. Aceman & S. H. Rosen, 630 Rogers Bldg., Vancouver, plans by Dirassar & James, 615 W. Hastings St., rein.-con. shopping center. **$2,500,000.**

▲ **Ont., Ottawa**—SHOPPING CENTRE—Eddie Bourque, Jr., 339 St. Andrew St., plans by Auguste Martineau, 72 Queen St., shopping centre, George St. **$2,000,000.**

▲ **Ont., Toronto**—OFFICE—H. C. Berk Investments, 75 Eglinton Ave. E., 50,175 sq. ft. office, southeast corner Yonge St. and Davisville Ave. **$1,500,000.**

## INDUSTRIAL BUILDINGS

▲ **N. J., Somerville**—PLANT—New Jersey Shale & Brick Co., Hillsborough Rd., Somerville, plant, Hillsborough Rd. **$1,500,000.**

▲ **N. M., Artesia**—GAS PROCESSING PLANT—Pan-American Petroleum Corp., 200 W. 1 St., Roswell, and Hondo Oil & Gas Co., 410 E. College Blvd., Roswell, gas processing plant, incl. 15,000,000 ft. gas daily and recovery 42,000 gal. daily liquid products, 13 mi. southeast of here, **$2,500,000.**

▲ **N. Y., Brockport**—PLANT—Owens-Illinois Glass Co., O-I Bldg., Toledo, O., 300,000 sq. ft. multi-furnace glass container plant, barge canal.

▲ **O., Mansfield**—PLANT—Borg-Warner Corp., Ingersoll-Humphreys Div., 200 S. Michigan Ave., Chicago 4, Ill. Plans by Marr, Knapp & Crawfis, 1475 Lexington Ave., Mansfield, 52,800 ft. plant with 362 ft. continuous kiln to produce vitreous china plumbing fixtures, 21,600 sq. ft. spray and inspection bldg., 26,400 sq. ft. warehouse, 12,600 sq. ft. mold shop, 10,000 sq. ft. glost plant and locker area. **$2,000,000.**

▲ **O., Mansfield**—PLANT ADDNS.—Empire-Reeves Steel Corp., 913 Bowman St., 535 ft. pickling line at south plant, **$3,500,000**, heat treating dept. addn., incl. 4 furnaces, **$1,500,000.**

▲ **O., Mentor**—PLANT—W. S. Tyler Co., 3615 Superior Ave., Cleveland, Zone 14, first unit, 600,000 sq. ft. plant. **$6,000,000.** McGeorge-Hargett & Hoag, 7016 Euclid Ave., Cleveland, Zone 3, consult. engrs. CD 3/27.

▲ **Tex., Orange**—PLANT—Allied Chemical Corp., 61 Broadway, New York 6, N. Y., high density polyethylene plant, for Petrochemical Division.

▲ **Va., Alexandria**—PROCESSING PLANT—Coca Cola Bottling Co., Inc., 1310 Roseneath Rd., Richmond, processing plant near Dowden Terrace and Washington Forest. **$1,500,000.** Luria Engineering Co., 511 5th Ave., New York, N. Y., consult. engr.

▲ **Wis., Janesville**—PLANT—General Motors, Inc., 1200 Industrial Ave., plans by W. Guenther, 28 N. Adams Ave., Detroit, Mich., 154,000 sq. ft. body plant addn. **$1,500,000.** CD 11/1/55.

## UNCLASSIFIED

▲ **Conn., New Haven**—TUNNEL—City, City Hall, vehicular tunnel under Elm St. from Temple St. to Broadway. **$3,000,000.** Tippetts-Abbett-McCarthy-Stratton, 375 Park Ave., New York 22, N. Y., consult. engrs.

▲ **Me., South Portland**—DRYDOCK—Walsh Constr. Co., 711 3rd Ave., New York, N. Y., constr. drydock, incl. 3 sets seating gates to handle ships more than 1,000 ft. long. **$10,000,000.** Constr. 1960-1961.

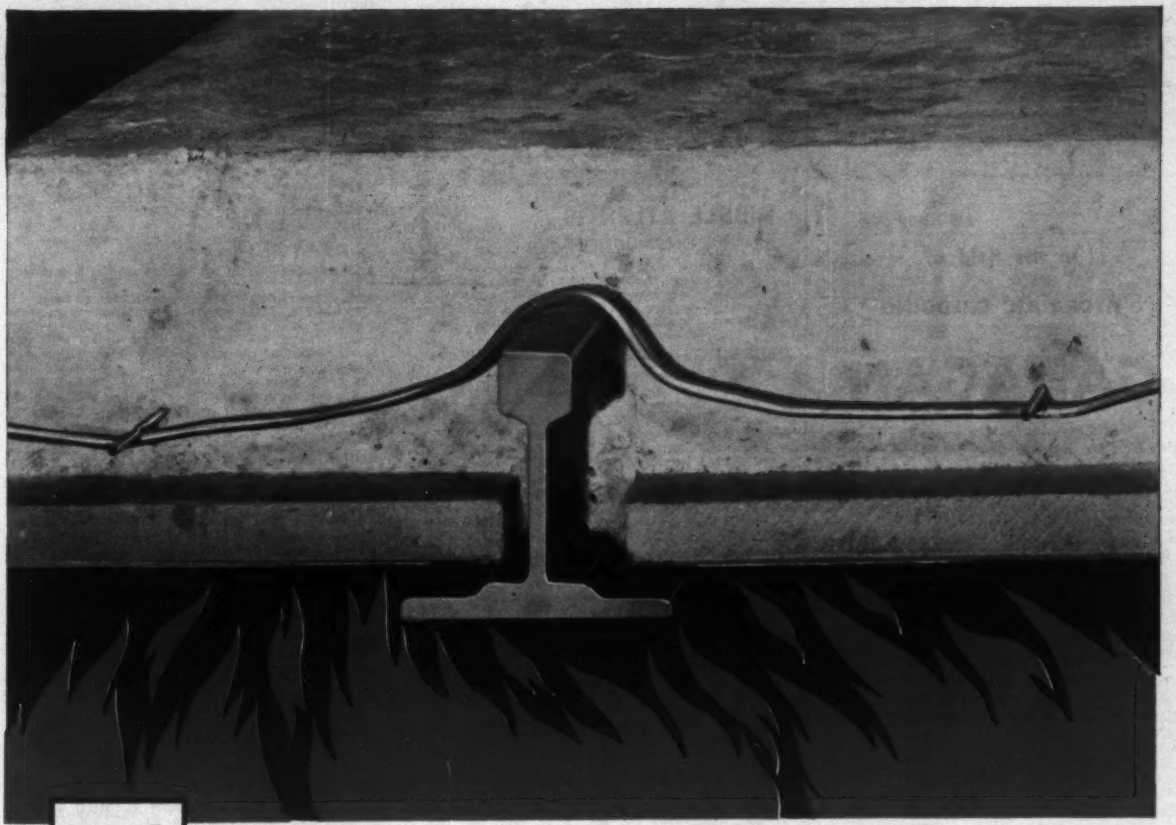
▲ **New Mexico**—NATURAL GAS PIPE LINES, etc.—El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., natural gas pipe lines, Malkamar and Kemnitz areas, Lea Co., **$4,312,000**; 2 gas line pumping stations, Malkamar area, Lea Co. **$500,000.**

▲ **N. Y., Oswego**—WATER PORT—Oswego Port Authority, West 1st St., deep water port, Grampus Bay, Lake Contario. **$4,000,000.** Fay, Spofford & Thorndike, 111 Beacon St., Boston, Mass., engrs.

▲ **Ohio**—STORAGE WELLS, etc.—East Ohio Gas Co., 1717 E. 9th St., Cleveland, Zone 14, 35 storage wells, Stark-Summit storage field between Akron and Canton, Stark and Summit Counties, **$1,500,000**; two fuel gas pipe lines, Warren area, Trumbull Co., **$600,000**; two fuel gas pipe line, Akron, Summit Co., **$245,000**; fuel gas pipe line, Painesville, Lake Co., **$150,000.** CD 10/10/52.

▲ **O., Toledo**—DOCK—Toledo-Lucas Co. Port Auth., 241 Superior St., 2,900 ft. dock on Presque Isle. **$3,800,000.** Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, N. Y., consult. engrs.

▲ **Va., Charlottesville**—FIELDHOUSE—Dpt. Educ. State of Virginia, State Office Bldg., Richmond, field house, University of Virginia, **$2,000,000**; engineering facility addn., **$427,000.**



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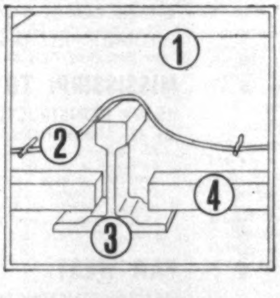

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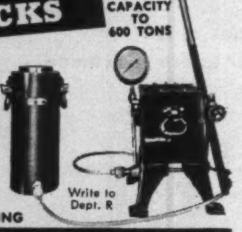

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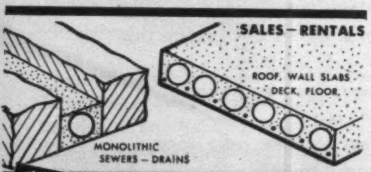

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# Bids—Low Bids—Contracts—Second Section

## NEW ENGLAND

### BUILDINGS—LB & CA

▲ **Phoenix Urban Corp.**, 420 Lexington Ave., New York 17, N. Y., CA Approx. **$8,400,000**, 3 story, 1st Stage, TOWN HOUSING, West End Development, BOSTON, MASS. Charles River Park, Inc., State St., Boston, Mass. Victor Gruen, 2 W. 13th St., New York, N. Y., archt. CD 11/27/56.

## MIDDLE ATLANTIC

### HEAVY CONSTRUCTION—BA

▲ **Pa., Athens** — BA 2/8 — Athens-Sayre Joint Auth., Sayre, sewage treatment plant, pumping and ejector stations, interceptors, force mains extensions of existing sanitary and storm sewers, $2,700,000. Gannett Fleming Corddry & Carpenter, Inc., 600 N. 2 St., Harrisburg, engr. CD 11/20.

### BUILDINGS—BA

▲† **N. Y., New York**—AIR CONDITIONING POST OFFICE—BA 2/19—General Services Admin., 250 Hudson St., New York, Zone 13, installation central air conditioning, U. S. Post Office and Annex, 33rd St. and 8th Ave. and U. S. Post Office, Morgan Annex, 341 9th Ave., Contr. IFB No. 00806. $7,000,000. Greenberg & Ames, 303 4th Ave., archts.-engrs. Guy Panero, 630 3rd Ave., engr. CD 11/19.

▲ **N. J., North Bergen**—HIGH SCHOOL—BA 2/20—Bd. Educ., Twp. North Bergen, high school, $4,500,000. Frederick Wiedersum Asso., 65 Roosevelt Ave., Valley Stream, N. Y., archts. CD 6/22.

▲ **N. Y., Albany**—BLDG. NO. 9—BA 3/9—Henry A. Cohen, dir. Bureau Contracts, State Office Bldg., general contract, heating, sanitary, electric, elevator, moving stairway and conveyor work for Bldg. No. 9, Department of Taxation and Finance, State Office Bldg. Campus Site. $5,400,000. Plans deposit $50 general, $40 each heating and electric, $20 sanitary, $15 elevator, $30 moving stairway, $10 conveyor. Unger & Unger, 219 E. 44th St., New York 17, N. Y., archts. DiStasio & Van Buren, 136 Liberty St., New York, Zone 6, consult. engrs. CD 12/29, under LB.

### HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**Stimm Assocs., Inc.**, 685 Ellicott Sq., Buffalo 3, N. Y., CA **$2,897,606**, est. $3,803,000. conc. pavt. 0.78 mi., grad., walls and water lines 1.39 mi., misc. work 0.3 mi., 5 hy. seps, etc. city of Buffalo-Kensington Expressway Arterial Hy., Section 1, Contr. II (Hickory St. to E. Eutica St.) FAC 59-19, Proj. U-377 (17), Erie Co.;

N. Y.—**A. E. Ottaviano, Inc.**, 80 Brook St., Croton-on-Hudson, N. Y., CA **$7,155,655**, 9 in. c. conc. pavt. 3.17 mi., misc. work 0.1 mi. acc. ramps 1.86 mi. etc. Long Island Expressway (South Oyster Bay Rd. to Nassau-Suffolk Acc.) County Line, Contr. No. 6, FAIIE 59-2. Proj. U-862 (23) Nassau and Suffolk Counties. Bids Nov. 19, awarded Jan. 22. CD 11/20, under LB.

▲ **C. J. Langenfelder & Son, Inc.**, 8427 Pulaski Hy., Baltimore, Md., LB **$3,403,469**, (15 bidders), Jones Falls Expressway, 29th St. interchange, BALTIMORE, MD. City, Baltimore Expressway Div., Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Jan. 27. CD 1/12.

### BUILDINGS—LB & CA

▲ **Starrett Brothers & Eken, Inc.**, 225 Broadway, New York 7, N. Y., CA **$16,000,000**, superstructure and ramps on roof of BUS TERMINAL, 8th Ave. W. 41st St., NEW YORK, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 9/16.

▲ **John McShain, Inc.**, 1750 North Olden Ave., Trenton 5, N. J., CA Est. **$4,000,000**, 2 LABORATORIES, CAFETERIA, Quaker Bridge Rd. and Rte. 1, West Windsor Twp., PRINCETON, N. J. American Cyanamid Corp., 30 Rockefeller Plaza, New York, N. Y. Bids Jan. 6. CD 12/28.

## SOUTH

### HEAVY CONSTRUCTION—BA

▲ **Virginia**—TUNNEL—BA 2/17—Elizabeth City Tunnel Comn., High St., Portsmouth, Section 1, underwater portion of second Norfolk-Portsmouth Tunnel. $10,919,000. Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, N. Y., engrs. CD 11/25.

### HEAVY CONSTRUCTION—LB & CA

▲ **TENNESSEE**—State Hy. Dpt., Nashville, Bids opened 1/22,

Tenn.—**Central Pennsylvania Quarry & Stripping Constr. Co.**, Hazelton, Pa., LB **$3,206,186**, (13 bidders), grading, draining and 6 bridges, 3 sets of twin concrete deck, steel beam structures, 1 set of twin concrete deck and precast girder structures and 2 concrete slab type structures 6.471 mi. section of Interstate Rte. No. 40 beginning Cheatham-Davidson Co. Line and extending toward Nashville to point 2,300 ft. west of Sawyer Brown Rd., Proj. No. I-40-3 (13) 189, Davidson Co.;

Tenn.—**Marion Constr. Co.**, 450 Craighead, Nashville, Tenn., and **Miles Constr. Co.**, Brentwood, Tenn., LB **$2,723,031**, (14 bidders), grading, drainage, 5 bridges, (2 sets of twin bridges and 3 single structures) paving crossroads with bit. material (plant mix) and Interstate traffic lanes and ramps with c. conc. 2/283 mi. on section of Interstate Rte. No. 40 beginning at point just west of Spence Lane between Murfreesboro Rd. and Lem Hill Pike and extending eastward to point just east of McGavock Pike, Project No. I-40-5 (7), 211, Davison Co.;

Tenn.—**Markwell & Hartz**, 3574 Summer Ave., Memphis, Tenn., LB **$5,335,015**, (16 bidders), grading, drainage, and 17 bridges, (12 highway grade separations, 3 railroad grade separations and 2 box types) paving crossroads only with bit. materials, plant mix, and c. conc. 4.97 mi. section Interstate Rte. No. 240 (S.E. Circumferential around Memphis) beginning at point approx. 0.4 mi. south of Park Rd. and extending to Bartlett Rd. north of Summer Ave. Proj. No. I-240-1 (17) 13, Shelby Co. CD 1/6.

▲ **TENNESSEE**—State Hy. Dpt., Nashville, Bids opened 1/22,

**Marion Constr. Co.**, 450 Craighead, Nashville, Tenn., LB **$5,604,976**, (21 bidders), one set dual bridges (river crossing spans are continuous deck plate girder bridges with stringer and floor beam floor system with concrete decks and approach spans are rolled beam bridges with concrete decks) 0.489 mi. across Cumberland River in Nashville on Interstate Rte. No. 65, beginning just north of Crutcher St. in East Nashville and extending southward across the river to point just north of T. C. Railroad near Wharf Ave. Project No. I-65 3 (8) 93, Davidson Co. CD 1/6.

### BUILDINGS—LB & CA

▲ **Stone & Webster Engineering Corp.**, 49 Federal St., Boston, Mass., CA Total cost **$43,455,840**, design and construct 50,600 kw. (thermal) vertical pressure tube NUCLEAR REACTOR, near Parr) Fairfield County, SOUTH CAROLINA. Carolinas-Virginia Nuclear Power Assocs., Inc., (Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, Va., Duke Power Co., 430 S. Church St., Charlotte, N. C., South Carolina Electric & Gas Co., 1309 Hampton St., Columbia, S. C. and Carolina Power & Light Co., 419 Fayetteville, Raleigh, N. C.). CD 1/21, under CA.

## MIDDLE WEST

### HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA and KENTUCKY**—State Hy. Dpt., 102 N. Senate Ave., Indianapolis, Bids opened 1/26,

**R. C. Mahon Co.**, P.O. Box 446, Detroit, Mich., LB **$5,394,929**, est. $6,154,940 (5 bidders), superstructure for bridge between Louisville, Jefferson Co., Ky., and New Albany, Floyd Co., Ind. CD 1/8.

### BUILDINGS—LB & CA

▲ **Park Plaza, Inc.**, c/o Donald E. Stout, 4444 N. Main St., Dayton, O., CA Est. **$3,000,000**, first phase, 300,000 sq. ft. Forest Park Plaza SHOPPING CENTER, DAYTON, O. Markey-Swallow Land Co., c/o R. L. Pine, Harries Bldg., Dayton, O.

▲ **Fruin-Colnon Contg. Co.**, 1706 Olive St., St. Louis 1, Mo. and **S. M. Wilson & Co.**, 1616 Cleveland Ave., Granite City, Ill., CA **$7,288,443**, Plan A, 600 unit HOUSING, EAST ST. LOUIS, ILL. East St. Louis Housing Authority, 810 Spivey Bldg., East St. Louis, Ill. Bids Jan. 5. CD 1/8, under LB.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa., CA **$4,000,000**, POLYVINL PLANT, ILLIOPOLIS, ILL. Borden Chemical Co., 350 Madison Ave., New York, N. Y. CD 1/12.

## MISSISSIPPI TO ROCKIES

### HEAVY CONSTRUCTION—BA

▲† **Kan., Salina**—MISSILE LAUNCH COMPLEXES—BA 2/24—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., constr. nine missile launch complexes at nine locations: each site will consist of launch control center, launching silo, roads and utilities, vicinity of Schilling Air Force Base, ENG-23-028-60-46. Over $10,000,000. Plans deposit $100. CD 1/22.

## FAR WEST

### HEAVY CONSTRUCTION—LB & CA

▲† **Kirst Constr. Co.**, 836 West Woodbury Rd., P.O. Box 556-F, Altadena, Calif., LB **$5,069,037** (12 bidders), San Gabriel River imprvt., Santa Fe to Whittier Narrows Flood Control Basin, CIVENG-04-353-60-11, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Jan. 26. CD 1/5.

### BUILDINGS—LB & CA

▲† **H. S. Wright Constr. Co.**, 414 Pontius St., Seattle, Wash., CA **$2,960,934**, general contract 129,000 sq. ft. CENTURY 21 COLISEUM, SEATTLE, WASH. State Dpt. Commerce & Economic Development, 312 1 Ave. N., Seattle, Wash. Bids Jan. 19, awarded Jan. 25. CD 1/21, under LB;

**Glantz Supply P. & H. Co.**, 2732 Hoyt St., Everett, Wash., CA **$533,273**, mechanical contract for Century 21 Coliseum (Seattle, Wash.).

## CANADA

### HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—Govt. of British Columbia Parliament Bldgs., Victoria, Bids opened 1/7,

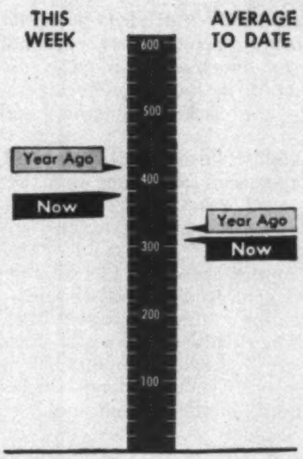
**John Laing & Son (Canada) Ltd.**, LB **$3,799,059**, Alt LB **$3,760,668**, Phase 2, foundations and substructure Fraser River Bridge, Port Mann. CD 12/1.

(Proposal Advertisements see pp. 86 to 89)

# Construction Scoreboard

## Contracts...

Millions of Dollars



### AMOUNT OF CONTRACTS LET

| | This Week | Cum. 5 wks# 1960 | Chge '59-'60 |
|---|---|---|---|
| | millions | | % |
| All Heavy Constr.... | $377.4 | $1,642.5 | 0 |
| **By Ownership** | | | |
| PRIVATE .......... | 196.7 | 867.2 | +26 |
| PUBLIC ............ | 180.7 | 775.3 | −21 |
| State & Municipal.. | 158.1 | 576.8 | −12 |
| Federal ........... | 22.6 | 198.5 | −35 |
| **By Type of Work** | | | |
| PUBLIC | | | |
| Waterworks ......... | 4.5 | 24.5 | −29 |
| Sewerage ........... | 15.6 | 61.8 | + 7 |
| Bridges* ........... | 14.6 | 59.5 | −18 |
| Highways ........... | 58.2 | 213.0 | −10 |
| Earthworks, Dams & Waterways ........ | 16.5 | 73.4 | +32 |
| Buildings: | | | |
| Excl. Housing...... | 52.0 | 155.3 | −44 |
| Housing ........... | 11.0 | 62.1 | +28 |
| Unclassified ......... | 9.0 | 126.9 | −28 |
| PRIVATE | | | |
| Buildings: | | | |
| Mass Housing...... | 91.3 | 349.7 | +41 |
| Commercial ....... | 24.5 | 198.1 | + 4 |
| Industrial ......... | 75.0 | 270.0 | +31 |
| Unclassified ......... | 5.2 | 48.2 | +14 |

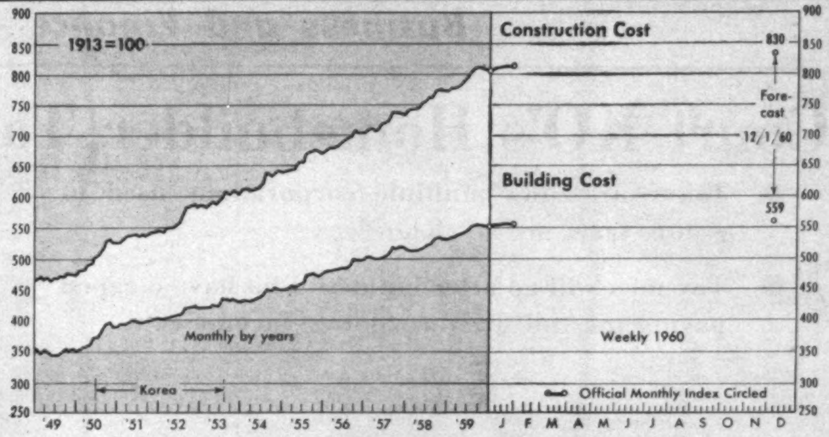
*Includes private ridges

#Revised to include Alaska and Hawaii

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

## CAPITAL . . .

| New Capital For Construction | Week of Jan. 28 | Cum. 4 wks 1960 | Chge '59-'60 |
|---|---|---|---|
| | millions | | % |
| Corporate Securities.. | $74.9 | $127.9 | −23 |
| State and Municipal: | | | |
| All Except Housing | 162.4 | 748.5 | +74 |
| Housing ........... | .... | 0.6 | −54 |
| Federal Loans....... | 1.9 | 3.5 | .... |
| Federal Aid ......... | .... | .... | .... |
| Total Nonfederal..... | $239.2 | $880.4 | +46 |
| Federal Appropriations: | | | |
| Projects in U.S. .... | .... | .... | .... |
| Outside U. S. ....... | .... | .... | .... |
| Total New Capital... | $239.2 | $880.4 | +46 |



## Current ENR Cost Indexes

| ENR INDEXES (1913=100), 20-cities' average | Week of Jan. 28 1960 | % Change from Dec. 31 1959 | % Change from Jan. 29 1959 |
|---|---|---|---|
| Construction Cost ............................ | 812.93 | +0.1 | +4.4 |
| Building Cost ................................ | 555.43 | +0.2 | +3.4 |

* Official Monthly Index for February 1960

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

### WAGE RATES, 20-cities' average

| | Feb. 1960 | % Change from Jan. 1960 | % Change from Feb. 1959 |
|---|---|---|---|
| Common.................................. | $2.638 | 0 | +5.4 |
| Skilled (average 3 trades)................. | 3.950 | +0.1 | +4.2 |
| Bricklayers............................ | 4.177 | +0.1 | +3.2 |
| Structural Ironworkers.................. | 3.982 | +0.1 | +4.6 |
| Carpenters............................. | 3.69 | 0 | +4.8 |
| Equipment operators (average three types)..... | 3.572 | +0.3 | +4.5 |

### MATERIAL PRICES, 20-cities' average

| | Feb. 1960 | Jan. 1960 | Feb. 1959 |
|---|---|---|---|
| Structural Steel (average 3 mills), per cwt...... | 5.50 | 0 | 0 |
| Lumber, 2x4 Fir, per M fbm.................. | 122.29 | +0.6 | +6.2 |
| Lumber, 2x4 Pine, per M fbm................. | 110.00 | +1.0 | +6.8 |
| Cement, bulk, per bbl......................... | 4.00 | +0.5 | +0.3 |
| Sand, per ton................................. | 2.467 | −0.2 | −0.6 |
| Ready-mixed concrete, per cu yd.............. | 14.29 | +1.0 | +2.4 |
| Gypsum sheathing, ½"x2'x8', per Msf*......... | 63.31 | +0.3 | +1.1 |
| Fiber board sheathing, ½" sq. ed., per Msf*.... | 73.61 | +0.1 | +3.2 |
| Mineral wool insulation, 3' batts, per Msf*..... | 68.43 | +0.7 | −2.0 |
| Crushed stone, 1½", per ton, CL............... | 2.70 | 0 | −2.2 |
| Concrete blocks, sand/gravel, 8"x8"x16", each*.. | 0.232 | −0.7 | +3.6 |
| | **Feb. 1960** | **Jan. 1960** | **Feb. 1959** |
| Brick, common per M.......................... | 40.10 | +1.2 | +5.9 |
| Lime, hydrated finishing, per ton, CL.......... | 38.84 | −1.2 | +2.2 |
| Structural clay tile, 3x12x12", per M, 2,000 up*. | 186.79 | +0.5 | +2.3 |
| Vitrified clay sewer pipe, std 12", per ft........ | 1.368 | −4.3 | +0.8 |
| Concrete sewer pipe, 12", per ft................ | 1.367 | 0 | +2.1 |

* Delivered, trucklots

### ENR INDEX REVIEW

| | Construction Cost 1913=100 | Construction Cost 1949=100 | Building Cost 1913=100 | Building Cost 1949=100 | Volume 1913=100 | Volume 1949=100 |
|---|---|---|---|---|---|---|
| 1959 | | | | | | |
| Jan........ | 778.28 | 163.15 | 536.23 | 152.43 | 460 | 133 |
| Feb........ | 778.75 | 163.25 | 537.25 | 152.72 | 472 | 136 |
| Mar........ | 781.35 | 163.80 | 540.32 | 153.59 | 586 | 169 |
| Apr........ | 784.41 | 164.44 | 542.93 | 154.33 | 532 | 154 |
| May....... | 790.37 | 165.69 | 544.44 | 154.76 | 700 | 202 |
| Jun........ | 795.16 | 166.69 | 548.35 | 155.87 | 650 | 188 |
| July........ | 806.69 | 169.11 | 551.74 | 156.84 | 671 | 194 |
| Aug........ | 811.15 | 170.04 | 554.31 | 157.60 | 509 | 147 |
| Sept........ | 812.56 | 170.33 | 555.88 | 158.01 | 545 | 158 |
| Oct........ | 811.40 | 170.09 | 555.40 | 157.88 | 415 | 120 |
| Nov........ | 809.78 | 169.75 | 554.19 | 157.53 | 509 | 147 |
| Dec........ | 808.63 | 169.52 | 552.80 | 157.10 | 436 | 126 |
| **1959 Average** | **797.39** | **167.17** | **547.82** | **155.72** | **540** | **156** |
| 1960 | | | | | | |
| Jan........ | 812.03R | 170.23 | 554.34 | 157.57 | 432 | 125 |
| Feb........ | 812.93 | 170.41 | 555.43 | 157.92 | ... | ... |

R: revised

## Business and Finance

# Court KO's Homebuilder Tax Device

- **Tax court rules multiple corporations used to reduce taxes are a "sham."**
- **Tax men will go after builders who have escaped paying the full 52% corporate income rate.**

A rude tax jolt may be in store for builders who have used multiple corporations to reduce taxes on profits from large housing developments.

**Here's how the multiple-corporation device works:**

A builder developing a large tract organizes several corporations—one for each parcel, and each planned to show a profit of less than $25,000. These corporations would then be taxed at a rate of 30%, compared to the 52% tax on earnings of more than $25,000.

**But such corporations are a "tax sham"** says the U.S. Tax Court in Washington, D. C. Taxes can therefore be assessed at the full 52% rate on the combined net income of the entire corporation. The ruling came in a test case involving Aldon Homes, Inc., a corporation organized to develop a 237-house tract in Downey, Calif.

**A "substantial number" of other cases involving builders will be affected** by the final outcome of the case, says the Internal Revenue Service. The case will be appealed.

Should the court's decision be upheld, IRS will try to collect tax deficiencies from offending builders back to 1951. That's possible because the test case is based on 1951 income tax returns; IRS has kept the issue open in all subsequent cases.

In the test case, Aldon Homes decided to develop its tract in parcels through 16 other corporations, which Aldon organized for that purpose. None of the new firms (called alphabet corporations because their names each begin with a different letter of the alphabet, from A through P) had any assets. They purchased lots in the tract from Aldon with unsecured notes in the amount of the purchase price. (Aldon had first borrowed $300,000 from investors.)

The three partners who controlled Aldon also organized a construction company, Donna Homes, Inc., for the sole purpose of developing the tract. Each of the 16 "alphabet" companies signed a "building agreement" with Donna Homes, making Donna the general contractor for construction.

State and regional authorities approved Aldon's subdivision plan; and county authorities issued building permits to the individual alphabet companies. Aldon received loan guarantee commitments from the Veterans Administration for mortgage loans on the houses to be built, and contracted with a local bank for an interim loan.

Aldon, Donna and the 16 alphabet companies operated from the same office; the same staff handled the books of all the corporations. The alphabet companies had no employees.

The housing tract was advertised as "Briarcliff Estates," an Aldon project; none of the other companies was mentioned in the ads. House construction moved from lot to lot, up and down streets, until the tract was completed.

When sales had been completed, investors received $87,369, or 49.05% of the net cash realized from the enterprise. The three partners received $90,770, or 50.9%.

But that return came after taxes of only 30% of total income claimed under the multiple-corporation set-up.

In challenging the tax returns, IRS argued that the entire income from development of the tract was attributable to Aldon Homes. The 16 alphabet companies, IRS contended, were not "tax worthy," because they were not formed for any business purpose, did not function in income-producing capacities, and lacked substance and reality.

The builders tried to justify the multiple corporations by arguing that they helped avoid a possible general claim against the entire project in case any portion of the tract was a failure.

The court pointed out that all companies bought liability and workmen's compensation insurance, and that stockholders already had one corporate shield in Aldon. It called the additional installation of 16 more corporate shields, "of minimal business significance."

The builders also argued that the promise of reduced taxes in the multicorporate structure helped attract capital—and attracting capital was a substantial business purpose.

That argument, the court ruled, would "enable the clothing of any tax avoidance or tax evasion scheme with a business purpose."

The court also rejected the builders' argument that the alphabet companies actually carried on the business activity.

The court said, "The entire development . . . from the purchase of the raw land to the construction of the 237 houses thereon, was a single or package transaction. . . . Moreover, and what is perhaps the most significant fact, Aldon, or those who controlled it, controlled the distribution of the profits derived from development of the tract as a whole."

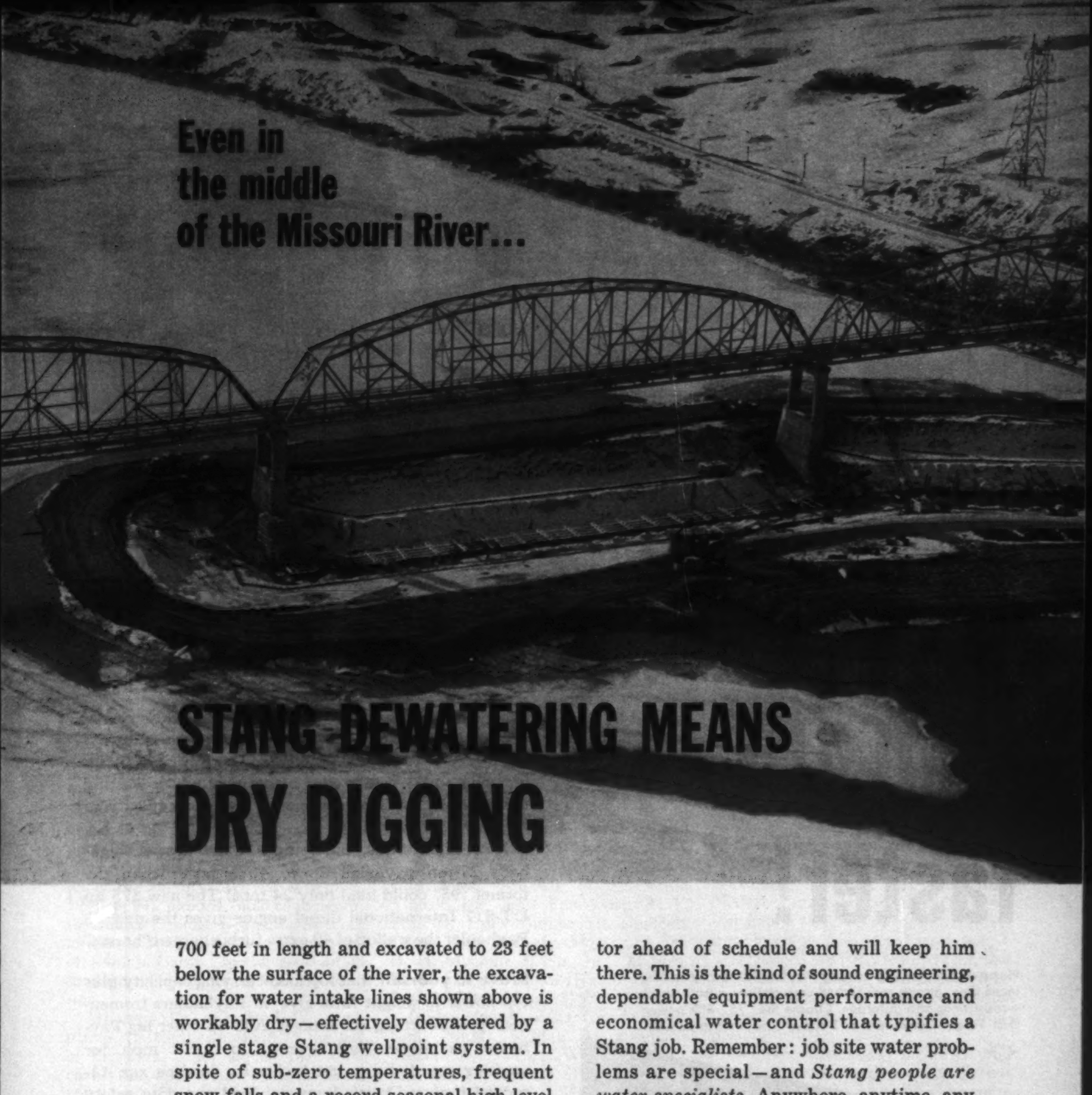
## Business in Brief . . .

• **Texas TV studio**—Construction on a $2-million radio-TV building for the DALLAS MORNING NEWS will start in mid-January. The building features a folded-plate concrete roof. George L. Dahl, Architects & Engineers, is designer; Lee & Emmert Engineers is general contractor.

• **Motel skyscraper**—A motel building, 25 to 35 stories high and costing $18 million, is planned for downtown Fort Worth. Parking will be on the same floors as rooms. The building will also include an auditorium seating 6,000 to 8,000. Oilman Jack Danciger is promoter.

• **Prefab housing**—A Japanese company will soon begin mass-producing plastic houses to sell at $1,000 per unit of 430 sq. ft. Aluminum and light steel sections will stiffen of the plastic walls. Plans call for monthly production rates of 1,000 by the end of 1960 and 10,000 by 1965.

• **Dallas shopping center**—Henry C. Beck Co. of Dallas will build a $6.25-million shopping center to serve North Dallas. Construction will begin in June, 1960, and is scheduled for completion in late 1961.



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**Look at those exclusive, rock-ribbed body corrugations!** International applies this strength-multiplying principle to reduce Payhauler® body weight by an amazing 30%! You "trade" 2½ tons of power-wasting dead weight for 3 bonus tons of payload capacity in the new 95 Payhauler!

New high-torque, high-output diesel power highballs 27-ton payloads up to 40% faster than the former "95" could haul only 24 tons! The new 375 hp DT-817 International diesel engine gives the new 95 Payhauler the wallop of 40 extra turbocharged "horses."

**Prove to yourself** that top load-carrying capacity plus top power-to-weight ratio give 95 Payhaulers tremendous profit-earning advantages. Add up other big Payhauler exclusives: fast reverse, up to 7.1 mph. for spotting speed; big-target bodies for loading zip; 11-second inverted-hoist dumping; load speeding safety of torqmatic braking and positive power-steering! Let your International Construction Equipment Distributor demonstrate!

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# Some Doubts About Usury Dispelled

Some of the doubts on what is, or is not usurious when a government-backed home loan is involved were partially resolved last week.

**In both Tennessee and Maryland, rulings were handed down declaring that the one-half of 1% insurance premium on mortgages insured by the Federal Housing Administration does not push the total charge to the borrower above the legal ceiling.** The decisions may help to revive the housing market in those areas.

The interest rate received by the holder of an FHA-insured mortgage is 5.75%. Effective rate to the borrower, however, is 6¼% when the insurance premium is added. Maryland and Tennessee both have legal ceilings of 6%.

The Tennessee decision, expected to be appealed, was made by a chancery court judge at Memphis. Lenders in the state had withdrawn from the FHA mortgage market, pending a decision on the legality of the total 6¼% charge.

Since September, when the FHA boosted the allowable interest rate to 5.75% from 5.25%, housing volume in Memphis alone has slipped at the rate of $25 million a year (ENR Jan. 14, p. 106).

The Maryland ruling was given by State Attorney General C. Ferdinand Sybert.

Such rulings are not binding, however, and the question could still be submitted to a court test.

On another point, however, Mr. Sybert did rule a charge usurious. It involved mortgages insured under FHA Section 203 (i), which involves home loans of $8,000 or less. On such mortgages the allowable interest rate is 5.75%. However, a lender is also permitted to obtain a service charge amounting to one-half of 1% of the loan. That is paid only once, in a lump sum.

Mr. Sybert ruled that the service charge added to the 5.75% interest rate constitutes usury.

That decision could pave the way for suits by borrowers to recover the amount of money equal to ¼% above the 6% legal rate. Unless the decision by the attorney general is upset by the courts, the service fee will have to be halved, according to Acting Bank Commissioner John D. Hospelhorn.

The ruling, however, has other implications that would extend to a much larger and more important part of the housing market than that served by FHA Section 203 (i).

# Price-Fixing Draws Record Fines

A federal judge in Boston has thrown the book at a trade association and 17 roadbuilding material companies for price-fixing conspiracies. He imposed fines totaling $456,000, ranging from $5,000 to $105,000 each. They are believed to be the largest fines ever imposed in a criminal antitrust case.

**The defendants, indicted last summer under the Sherman Act (ENR Sept. 3, 1959, p. 94), pleaded "nolo contendere" (no contest).** Judge George C. Sweeney levied the fines on the recommendation of John J. Galgay, special assistant in the Justice Department's Antitrust Division.

Attorneys for several of the companies registered opposition to the size of the fines. They argued that their clients had operated at a loss in recent years, and the fines could force them out of business.

**"These corporations have broken the antitrust laws of the United States, and if they can't survive without breaking the law, let them die,"** replied the judge.

Annual sales of asphalt, road tar and bituminous concrete by the companies to the Commonwealth of Massachusetts and the state's cities and towns totaled $9.5 million.

The conspiracy to rig bids submitted to Massachusetts continued over five years or more, according to Mr. Galgay

**Trimount Bituminous Products Co., Everett, Mass., and Allied Chemical Corp., New York City, were hit hardest.** They were fined $105,000 each.

Koppers Co., Inc. of Pittsburgh, was next with a fine of $70,000.

Bituminous Concrete Association Inc. of Boston was fined $10,000.

**The other companies involved and the fines levied against each are:**

American Oil Products Co., Somerville, Mass., $10,000; D. J. Cronin Asphalt, Inc., East Providence, R. I., $10,000; Essex Bituminous Concrete Corp., West Peabody, Mass., $20.000; H. H. McGuire & Co., Inc., Malden, Mass., $24,000; James Huggins & Son, Inc., Malden, Mass., $5,000.

Independent Coal Tar Co., Framingham, Mass., $5,000; Massachusetts Broken Stone Co., Weston, Mass., $15,000; Merrimack Paving Corp., Groveland, Mass., $10,000; Rock-Asphalt Corp., Haverhill, Mass., $10,000; Lake Asphalt & Petroleum Co. of Massachusetts, East Deerfield, $12,000; Mystic Bituminous Products Co., Inc., Everett, Mass., $15,000; Vulcan Construction Co., Boston, $5,000, and Wachusett Bituminous Products Co., Worcester, $5,000.

The same companies were also hit with civil suits on the same charges last October. If standard practice is followed, the civil action will be settled by the signing of consent decrees. The decrees will enjoin future agreements or practices of the type attacked in the suits.

## Lumber Grade-Marking Order Opposed by NAHB

The Federal Housing Administration's grade-marked lumber requirements are opposed by the National Association of Home Builders. The organization wants the order rescinded.

When FHA announced that starting April 1 all framing lumber in housing constructed under FHA inspection be grade-marked, Canadian lumbermen protested (ENR Jan. 7, p. 62).

Shortly after, representatives of the Canadian lumber industry and FHA compromised. The agency said it would accept lumber graded and marked in accordance with existing standards of Canada's nine producing associations (ENR Jan. 21, p. 78).

Nothing, however, was heard from NAHB. But at the association's annual convention two weeks ago, a committee introduced an unexpected resolution.

It charged the FHA requirement, also applicable to housing built under Veterans Administration financing terms, "would adversely affect the free enterprise system."

Lumber association members and non-association members that do not grade-mark would have their competitive positions wiped out, the committee said.

Lack of competition, or lessening of it, would boost prices, the committee warned. (Shortly after the requirement was announced in November, lumber prices rose. Since then, declining demand has lowered them.)

The committee therefore urged that NAHB representatives ask FHA to eliminate the grade-marking order. The recommendation was approved by the delegates.

As yet, there is no comment from FHA technical officials.

*(B&F continued p. 82)*

# January Contract Awards Dip

Heavy construction contract awards reported by ENR in January slipped to $1.3 billion in the 50 states of the U. S. That's 1% below the weekly average pace in December and 4% below January 1959.

**The month-to-month decline chiefly reflects a decline in private mass housing contracts resulting from tight credit** and higher mortgage interest rates.

**Because of an 18% drop in housing awards, the over-all private industry total of $670 million was 4% below the December rate.** But private work's margin over one year ago is 22%, with all types of private construction outstripping their January 1959 contract rates.

**The public construction picture, however, is in sharp contrast to the private one.** Total awards of $595 million are up 2% from December's rate, but they're 22% below the weekly average of one year ago.

**The modest month-to-month gain in public works stems entirely from increased activity by state and local governments.** They awarded $419 million to contractors in January to push volume over the December pace by 5%; it is 20% below January 1959, however.

Federal agencies chalked up volume of $176 million, off 5% from December, and short 27% of the year-ago rate.

Although January's slump in private housing contracts contributed most to the over-all dip in both private and total construction volume, the $258 million in housing awards was the largest single source of contractors' new business during January.

Moreover, the total is 30% above last year's first month. That favorable comparative margin could diminish, however, because the $247.7 million signed up in the five-week month of January 1959 was the smallest total of any month in 1959. To maintain the favorable edge, there will have to be substantial improvement in the housing sector during coming weeks.

**Industrial and commercial contracts both showed good gains over December and January 1959.** Shopping center awards boosted commercial activity as a follow-up to the big rise last year in housing development volume. Total commercial contract awards in January of $174 million represent the best accumulation since last August.

In public works, highways and bridge awards rose 3% and 47% respectively in January. But activity still is 18% below highway work of one year ago and 23% below bridge work one year ago. In 1959, road projects were moving at a fast clip before the cutback in federal-aid funds slowed the rate of contracting.

# Costs Up, but Stability Seen

Construction and building costs continue their upward march this month.

**ENR's 20-Cities Construction Cost Index value is at a record high value of 812.93. The ENR Building Cost Index value of 555.43 is close to its record peak of 555.88,** set last September. Both indexes are based on average costs in 1913 as 100.

Both cost indexes top January and both show sharp gains over February 1959. The Construction Cost Index is up 0.1% since last month and 4.4% over one year ago. The Building Cost Index tops January by 0.2% and February 1959 by 3.4%.

**Lumber prices exerted the strongest influence on costs** during the month.

A downturn in lumber prices that started last summer was abruptly reversed in December, when lumber yards scrambled to rebuild depleted inventories. That rally continued through the first two weeks of this year. Then the dealers encountered difficulty in moving lumber when housing slowed. Prices started to drop again.

**Costs now should remain stable—maybe ease slightly**—over the next few months. Reasons: Still further declines in lumber prices, no wage increases for construction workers until March, stable cement prices and expected stable prices for construction steel.

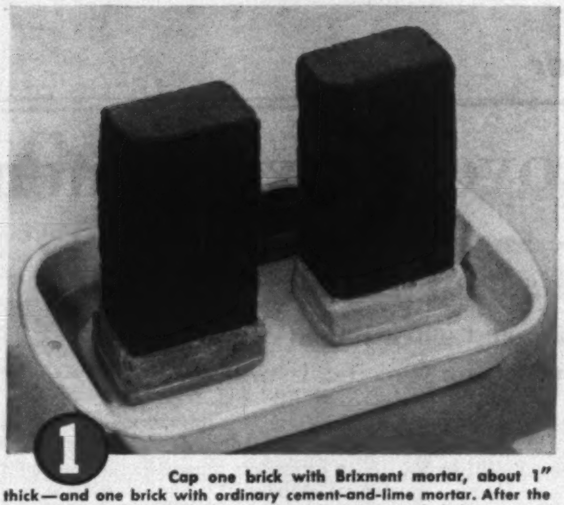
## Engineering Construction Contracts for January

Four Weeks—Thousands of Dollars (000 Omitted)

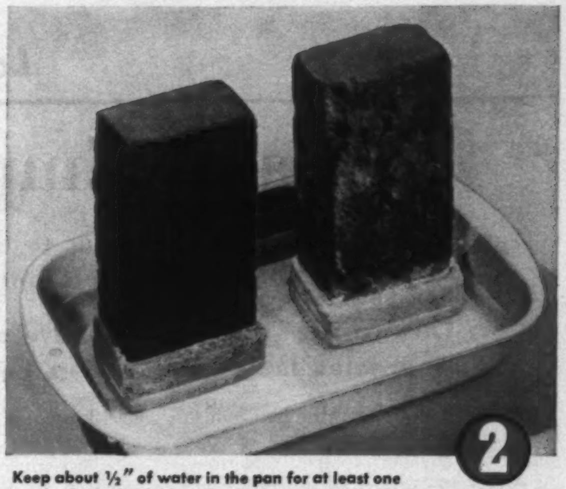
| | January, 1960 | | | | | | Total U. S. | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | New England | Middle Atlantic | South | Mid-West | Mississippi to Rockies | Far West* | January 1960 (4 Weeks) | January 1959* (5 Weeks) | Change '59 to '60 (Av. Wk.) | Canada January 1960 |
| **Public Works, Total** | **27,504** | **139,594** | **80,913** | **114,656** | **108,628** | **123,251** | **594,546** | **958,056** | **−22** | **39,203** |
| Waterworks | 1,902 | 2,188 | 1,714 | 2,385 | 3,966 | 7,789 | 19,944 | 34,449 | −28 | 4,753 |
| Sewerage | 323 | 5,938 | 3,554 | 23,074 | 6,777 | 6,466 | 46,132 | 57,465 | +0.3 | 5,640 |
| Bridges | 446 | 25,449 | 838 | 6,421 | 4,884 | 6,675 | 44,713 | 72,615 | −23 | 632 |
| Earthwork, waterways | 2,482 | 1,618 | 16,143 | 2,009 | 28,777 | 5,843 | 56,872 | 55,825 | +27 | 3,012 |
| Streets and roads | 3,339 | 36,501 | 22,523 | 43,678 | 27,242 | 21,463 | 154,746 | 235,530 | −18 | 7,246 |
| Buildings: Residential | 9,655 | 23,501 | 2,939 | 9,540 | 488 | 4,875 | 50,998 | 48,831 | +31 | ........ |
| Other | 8,539 | 24,670 | 15,645 | 21,674 | 14,583 | 18,138 | 103,249 | 277,070 | −53 | 13,109 |
| Unclassified | 818 | 19,729 | 17,557 | 5,875 | 21,911 | 52,002 | 117,892 | 176,271 | −16 | 4,811 |
| State and Municipal | 18,238 | 122,559 | 45,847 | 107,552 | 59,083 | 65,375 | 418,654 | 654,957 | −20 | 30,924 |
| Federal | 9,266 | 17,035 | 35,066 | 7,104 | 49,545 | 57,876 | 175,892 | 303,099 | −27 | 8,279 |
| **Private, Total** | **74,052** | **200,253** | **78,475** | **87,430** | **134,519** | **95,785** | **670,514** | **685,900** | **+22** | **57,314** |
| Bridges | ........ | 93 | 166 | ........ | ........ | ........ | 259 | ........ | .... | ........ |
| Buildings: Industrial | 22,011 | 93,268 | 17,745 | 17,052 | 23,633 | 21,370 | 195,079 | 205,700 | +19 | 15,719 |
| Mass Housing | 33,954 | 84,328 | 23,024 | 17,349 | 56,890 | 42,906 | 258,451 | 247,664 | +80 | 3,495 |
| Commercial | 15,417 | 22,564 | 28,514 | 49,729 | 43,828 | 13,609 | 173,661 | 190,338 | +14 | 23,400 |
| Unclassified | 2,670 | ........ | 9,026 | 3,300 | 10,168 | 17,900 | 43,064 | 42,198 | +28 | 14,700 |
| **Total Jan. 1960—4 weeks** | **101,556** | **339,847** | **159,388** | **202,086** | **243,147** | **219,036** | **1,265,060** | .......... | − 4 | 96,517 |
| Total Dec. 1959—5 weeks* | 69,665 | 346,518 | 306,962 | 171,062 | 411,108 | 295,277 | 1,600,592 | .......... | .... | 120,853 |
| Total Jan. 1959—5 weeks* | 88,956 | 380,567 | 282,161 | 250,225 | 393,694 | 248,353 | .......... | 1,643,956 | .... | 140,750 |
| % Change '59 to '60 (Av wk) | +43 | +12 | −29 | +1 | −23 | +10 | .......... | .......... | .... | −14 |

* Includes Alaska & Hawaii contracts

ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $53,000; *other public works,* $88,000; *industrial buildings,* $110,000; *other buildings,* $400,000.



Cap one brick with Brixment mortar, about 1" thick—and one brick with ordinary cement-and-lime mortar. After the mortars have hardened, place both brick in a pan of shallow water.



Keep about ½" of water in the pan for at least one week. Even if soluble salts are present in the brick or sand, you will soon be convinced that *Brixment mortar helps prevent efflorescence.*

# BRIXMENT mortar helps prevent EFFLORESCENCE!

Efflorescence is caused by the soluble salts which almost all masonry materials contain. If reached by water, these salts dissolve and are drawn to the surface of the wall.

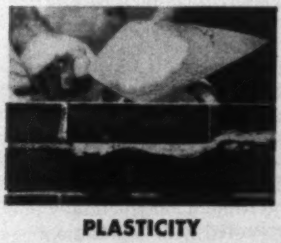
The air-entraining and water-repelling agent in Brixment makes Brixment mortar almost impermeable. This helps prevent water from saturating the mortar and dissolving any small amount of salts which it may contain. It also helps prevent water from percolating down through the wall, dissolving salts which may be in the brick or the back-up, and carrying them to the surface.

Protection against efflorescence is only *one* of the characteristics in mortar necessary to produce top-quality masonry at lowest cost. Several others are listed below—and *no other mortar combines ALL these characteristics to such a high degree as Brixment mortar.*

It is this combination of advantages that makes Brixment superior to any mixture of portland cement and lime—and which also accounts for the fact that Brixment has been the leading masonry cement for over 40 years.

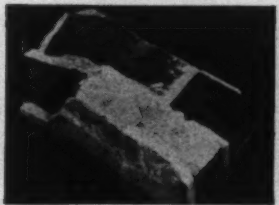
Louisville Cement Company, Louisville 2, Ky.

## BRIXMENT MORTAR ALSO COMBINES THESE 8 OTHER ESSENTIAL CHARACTERISTICS

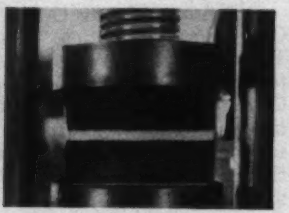


**PLASTICITY**

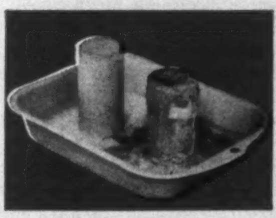
**WATER RETENTION**



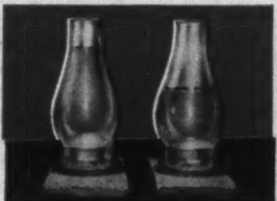
**BOND**



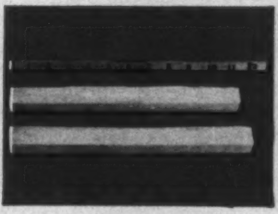
**STRENGTH**



**DURABILITY**



**IMPERMEABILITY**



**SOUNDNESS**

**YIELD**

# Ontario Employers Experiment

- **Faced with problems similar to those here, Ontario contractors have formed a super association of employers.**
- **They're pressing for legislative action and government sponsorship of a joint labor-management conference on specific issues.**

Employers in the construction industry of Ontario are disturbed by the same types of labor problems that trouble American contractors, but they have refined their efforts to cope with them more than have their American counterparts.

In a series of unusual steps to improve industry labor relations within the province, they have formed a super association of employers, launched an emergency program of legislative action and requested government sponsorship of a specifically oriented, joint labor-management conference somewhat suggestive of our Construction Industry Joint Conference and the Meany-proposed White House conference.

Their goals include speedy settlement of jurisdictional disputes, elimination of unlawful picketing and illegal work stoppages, a special construction industry panel within the Labour Relations Board, standardization of labor contracts, and conciliation procedures that promote effective multiple and joint negotiations.

First step in the industry's aggressive campaign was the formation last fall of the Ontario Federation of Construction Associations, which represents firms engaged in all phases of the Ontario construction industry.

OFCA members are: Ontario General Contractors Association; Metropolitan Toronto Sewer & Watermain Contractors Association; Ontario Branch of the Canadian Institute of Steel Construction, Inc.; Ontario Road Builders Association; Electrical Contractors Association of Ontario; Ontario Branch of the Canadian Plumbing and Mechanical Contractors Association.

**The new federation has taken the position that nothing is more important to any of its members at the present time than labor relations.**

Relying heavily on the recommendations of the provincial Select Committee on Labour Relations, it has prepared a list of legislative proposals on which it seeks immediate action. It is urging every employer member of the industry to telephone, telegraph or write his provincial legislators requesting adoption of the program.

The legislative changes sought by the association are these:

- Make unions as responsible for violations of the law as companies are.
- Set up effective machinery for speedy and binding settlement of all jurisdictional disputes.
- Effectively eliminate all unlawful work stoppages.
- Effectively prohibit picketing in support of unlawful activities.
- Provide effective enforcement ma-

# CCA Meeting Stresses Labor

## Seminar and informal discussions highlight contractors' efforts at better understanding of labor matters

Labor relations proved to be a central topic of discussion at the 42nd annual meeting of the Canadian Construction Association held in Calgary, Alberta, last week.

During the four-day meeting attended by over 700 delegates from all the provinces, members were briefed on a number of labor issues and developments, including a seminar program for contractors, informal labor-management discussions, coordination of contractor activities, wintertime construction and apprenticeship.

George Lipsett, retiring chairman of the association's labor committee, reported on the success of the association's experiment with university seminars in labor law for construction employers (ENR Jan. 14, p. 112). Further courses, he said, are being arranged for this year.

Informal approaches to top Canadian labor leaders were reported, with a view to future meetings for discussion of mutual problems. The importance of participation by properly informed employer members of the industry was stressed. This, it was noted, is one of the main objectives of the seminar program.

CCA again endorsed its hands-off policy with respect to local bargaining. Its headquarters staff serves in an advisory capacity only.

The association's labor committee, however, stressed the need for better coordination of employer activities in the labor field. It noted that construction unions have gained great strength through coordination of the efforts of autonomous units and said no counterpart to this exists on the employer side.

Some evidence of the interest in better information and coordination appeared in the fact that a full day's preconvention forum on labor relations was held for officers of affiliated organizations, such as local builders' exchanges.

On the apprenticeship front, it was noted that existing training programs still fail to meet either present or future needs for skilled tradesmen.

The CCA apprenticeship committee, however, reported that registration of indentured apprentices increased by 9% last year in those eight provinces that have apprenticeship agreements with the federal government. It urged all general and trade contractors to support the training programs and said it is particularly important for them to provide job opportunities for apprentices.

The achievements of the National Joint Wintertime Construction Committee were noted with satisfaction.

The program sponsored by the committee seeks to encourage provincial and municipal construction projects during the winter months. Last year, total expenditures amounted to $7 million and 4,000 man-months of employment were provided.

A further gain in the volume is expected this year and hope was expressed that the program could be extended to privately financed projects.

# in Unity

chinery to ensure compliance with the Labour Relations Act.

- Make the Department of Labour directly and fully responsible for enforcement of its labor legislation.

**The employer association has, in the meantime, requested the provincial minister of labor** to sponsor and convene on a continuing basis a joint labor-management conference without prejudice to immediate action on these legislative proposals. OFCA would provide the employer representation.

Conference goal is more stable labor relations through more effective and appropriate labor laws, practices and policies.

**In a radical departure from the present approach to our Construction Industry Joint Conference, the federation is proposing a specific agenda containing a number of complex and controversial proposals.**

Most far-reaching of the suggestions is one that has been unsuccessfully advanced in the past in the United States —creation of a special construction industry panel of the Labour Relations Board.

OFCA suggests that the panel have the power to expedite and standardize all decisions, policies and procedures on industry matters within its jurisdiction. It also suggests that a special joint labor-management advisory committee be set up to help the panel, on request, in formulating its policies and procedures.

Another proposal calls for effective settlement machinery for jurisdictional disputes. Like our own machinery, the new tribunal would be a joint labor-management one but, unlike our National Joint Board, it would have the power and ability to enforce its decisions.

Other proposals call for a reassessment of present public and private policies affecting bargaining patterns and techniques.

OFCA suggests that conciliation policies be reviewed to make them serve "the desirable practice of local, multiple and joint negotiations." It wants to explore forms of bargaining machinery that could lead to standardized forms of master labor contracts covering all trades in local areas, wherever practicable. And it urges that job evaluation steps be taken "to assess in a realistic manner" the wage differentials that exist between the crafts in local areas.

## Labor in Brief . . .

- **Picketing limit killed**—The Colorado Supreme Court has declared unconstitutional and void a city of Golden ordinance restricting picking to three persons at a time. Municipalities have no power to regulate labor disputes, the court said.

- **Unions hit moonlighting**—Leaders of some of the building trades unions in Nashville, Tenn., have asked the city civil service commission to prohibit municipal workers from taking part-time jobs in off-duty hours. Unions say half of the city force is plying other trades at less than union scales, many in the electrical, painting and bricklaying fields.

- **Unionists seek security**—What are the top priority collective bargaining goals of union members? Job security and income security, say General Electric and Westinghouse workers in a recent union poll. Other high-interest issues in upcoming negotiations are improved pension and welfare benefits, a general wage increase, improved vacations.

- **State-wide contract sought** — The Montana Building Chapter of the Associated General Contractors and the Montana State Council of Carpenters are exploring the possibility of a state-wide labor contract. It would be the chapter's first such contract with any craft.

- **Engineers or detectives?**—Minnesota county highway engineers have filed with a legislative study committee their objections to having to investigate records of highway contractors to see if prevailing wages are being paid. The state highway commissioner says present regulations require such policing.

- **Off-beat venture**—The American Federation of State, County and Municipal Employees District Council 48, representing government workers in the Milwaukee, Wis., area, is sponsoring a nation-wide art contest to dramatize the work of public employees. A total of $725 in prizes will be awarded in three classes. Entries are to show public employees at their jobs.

- **AFL-CIO economic analysis**—The Administration and business have dangerously slowed the nation's economic growth, claims the AFL-CIO. The union says that the Administration's tight money policy and attacks by business and government on wage increases "in the name of fighting inflation" are responsible for the decline. The widening gap between ability to consume and ability to produce must be closed, it says.

- **Shorter week**—Marking some progress in labor's campaign for a shorter workweek in England, the building trades unions have negotiated a new contract that gives 250,000 workers a 40-hour week (instead of 44) during the winter months. Contract was negotiated with the British Federation of Civil Engineering Contractors, which represents about 600 firms. Workweek provision becomes effective next November.

- **Roadbuilder blacklisted**—The Wisconsin Highway Commission has suspended bidding privileges of a Tomah, Wis., contractor who was fined $400 in Superior Court, Madison, after admitting payment of laborers wages to several employees doing work of carpenters and iron workers.

- **Bridges to Hawaii**—Harry Bridges' International Longshoremen's and Warehousemen's Union has begun efforts to organize construction workers on the island of Maui, one of the outlying islands in the Hawaiian chain. Loss of members through mechanization in the sugar, pineapple and stevedoring industries is forcing the union to move into other fields.

- **Lockout charged**—A local of the plasterers union claims that a November 25 shutdown of $25 million worth of construction work in Hamilton, Ont., was a lockout and has asked the Ontario Labor Relations Board for permission to sue participating contractors for damages. Shutdown occurred in the wake of the current carpenters' strike, now over two months old.

*Aerial view of the Port of Sacramento lock and bascule bridge project, with Bethlehem sheet piling in guide wall system.*
*General Contractors: Rothschild, Raffin & Weirick, Inc., Yuba Consolidated Industries, Inc., and George Pollock Construction Co.*

**Building a deep-water port... 43 miles inland**

*Bethlehem Z-piling, 51 ft long, in barge approach wall.*

A multi-million dollar, 5-year project will make a deep-water port of Sacramento, Calif., connecting the city to San Francisco Bay by a barge canal and a 43-mile-long ship channel.

First phase of the project, now well underway, is a barge canal, navigation locks, and a bascule bridge. Bethlehem Z-piling is used in the barge approach wall construction; sheet piling is used in the cut-off walls for bridge abutments, and along the base line of lock walls. The U. S. Army Corps of Engineers designed the project and is supervising it.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
*Export Distributor: Bethlehem Steel Export Corporation*

**BETHLEHEM STEEL**

BETHLEHEM STEEL

# Safety Committee Checks Jobs

A new labor-management committee has begun on-the-spot checks of Arizona construction projects as part of a compulsory safety program voluntarily accepted by unions and contractors.

The four-man committee is urging contractors, labor officials and workers to abide by the standards of the Manual of Accident Prevention compiled by the Associated General Contractors.

The manual became a mandatory part of the Arizona master labor agreement signed in June by contractor associations and building trades unions.

The word being passed by members of the safety committee is: "Safety does not cost, it pays." Committee members warn that safety can be achieved only by constant and careful attention. They promise to promote adherence to the manual "without discrimination against either labor or management."

Committee inspection trips are unscheduled.

Chairman of the committee is Ray Wells, industrial relations manager of Fisher Contracting Co. of Phoenix. Other members are John Van Valkenburgh, manager of N. P. Van Valkenburgh Construction Co. of Phoenix; Cotton Murray, district representative, International Brotherhood of Boilermakers, Local 627; and Bill Harkness, business agent, Laborers Local 183.

# AGC Sees New Demands Coming

Collective bargaining demands of construction unions this spring will include demands for pre-hire and subcontracting clauses in labor contracts, predicts James D. Marshall, executive director of Associated General Contractors of America.

Mr. Marshall, who spoke last week at the annual meeting of the Minnesota AGC in St. Paul, pointed out that the Landrum-Griffin law has legalized pre-hire agreements, a seven-day union shop and contract clauses that place restrictions on the subcontracting of on-site work.

The AGC spokesman also forecast that upcoming labor contract negotiations will continue the general rise in wage rates that has marked construction agreements for more than one decade.

Mr. Marshall called for cooperation between labor and management to regain industrial maintenance work lost since World War II. Establishment of the contract principle in industrial maintenance, he said, would add $4 billion a year to construction volume.

Two things were suggested by Mr. Marshall as part of the effort to promote the principle: Minimize work stoppages and eliminate "fringes." Fringes, he said, are inapplicable to year-round maintenance work.

Mr. Marshall expressed concern that the new labor law may strip international union officials of their power to police local unions that refuse to follow "responsible" national leadership.

# Strike-Prevention Study Urged

George Romney, president of American Motors Corp., has accused the nation's top policy makers of ducking the issues left in the wake of the labor dispute in the steel industry.

He said Congress should authorize "a congressionally-presidentially appointed commission to determine how such national emergencies are caused and how they can be prevented."

So far, no serious efforts in that direction have been made either by the Administration or by Congress. What the President has done to date is to ask some of the Cabinet members and the chairman of the Council of Economic Advisers "to study" the matter.

The real issue, according to Mr. Romney, is not inflation or local working conditions, but "America's survival." Calling the steel dispute and the settlement a "national catastrophe," he said the crux of the problem is excess employer and union power and the extension of already excessive federal power.

Joint bargaining on the part of large employers should be prohibited outside of the craft and service industries, Mr. Romney asserted, as should joint bargaining on the part of unions in large concerns. The alternative, he suggested, is continuation of a power struggle that destroys collective bargaining, undermines our economic system, usurps freedom and leads to collectivism.

"We cannot afford further delay . . .," Mr. Romney said. "And yet we are headed into an election year with the key political figures . . . showing only relief that the steel settlement will allow them to duck the issues once more."

# OFFICIAL PROPOSALS

Bids: March 2, 1960

## *Municipal Parking Facility*

CITY OF BINGHAMTON
DIVISION A
NOTICE TO BIDDERS

1. Sealed proposals for performing all work in connection with the Building, Plumbing, Ventilating, and Electrical wiring and Electrical Heating, Contracts I, II, III and IV, respectively are hereby invited and will be received by the Board of Contract and Supply until 10:30 o'clock, Eastern Standard Time, on March 2, 1960, in the Council Chambers, City Hall, Binghamton, New York and there publicly opened and read immediately thereafter.
2. The work will consist of providing all labor, materials, equipment and incidentals and performing all operations required for the construction, complete and ready for operation, of the Parking Facility, including all Foundations, Plumbing, Ventilation, Electrical and all related work.
3. Drawings, specifications, bidding and contract documents may be examined at the office of the Engineer, Gage & Martinson, 145 East 49th Street, New York 17, New York, or at the office of the City Engineer at City Hall and obtained from the latter at a deposit of $40.00 per set. Full refund will be made to actual bidders for return of each set in good condition within two weeks after closing date for receipt of bids.
4. Each bid must be accompanied by a Bid Security in the form of a bid Bond or a certified check payable at sight to the Treasurer of the City of Binghamton in an amount not less than Five Percent (5%) of the amount of the total bid. Such Bid Security will be returned to all except the three lowest formal bidders within five (5) days after the formal opening of bids, and the remaining Bid Securities will be returned within two (2) days after the Owner and the accepted bidder have executed the contract, or if no contract has been executed, within thirty (30) days after the date of opening of bids, upon demand of Bidder at any time thereafter, so long as he has not been notified of acceptance of his bid. If the Bidder to whom the contract is awarded does not execute the contract and furnish the required bond within fifteen (15) days after receipt of notice of award, the aforesaid Bid Security shall be paid to the City Treasurer as liquidated damages.
5. The Owner reserves the right to reject any or all bids, to waive any informality in bids received and to accept that bid which in its judgment best serves the interest of the City.

BOARD OF CONTRACT AND SUPPLY
By: Richard Zeboris, Secretary.

February 4, 1960.

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Bids: February 16, 1960

## *Narrows Bridge Cables and Suspenders*

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Tuesday, February 16, 1960

For Narrows Bridge Contract No. NB-3, Cables and Suspenders. The bid must be accompanied by a deposit in the amount of $500,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $25.00, which will not be refunded.

# OFFICIAL PROPOSALS

Bids: February 18, 1960.

## New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 18th day of FEBRUARY 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

| County | Contract No. | Name | Miles | Type | Deposit | Estimated Cost of Work |
|---|---|---|---|---|---|---|
| DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York | | | | | | |
| Essex<br>(Rte. 86) | FARC 60–16 | Jay-Lake Placid, Pt. 1, S.H. 5540<br>Project F-876(5) | 1.02 | Asph. Conc. Pavt. Plate Gird. Br. 137′ Sp. | $24,000<br>Plans $5 | $424,000 |
| Saratoga | R.C. 60–13 | Various State Highways on Rtes. Nos. 67, 147, 50, 29, 9P and 9N | .... | Removal of 237 Trees | $600<br>Plans $5 | 10,000 |
| DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York | | | | | | |
| Oneida<br>(Rte. 46) | FARC 60–14 | Delta-Westernville, S.H. 1141<br>Rome-Northwestern, Pt. 1, S.H. 561<br>Project S-372(2) | 4.42 | Asph. Conc. Type 1A Prestressed Conc. Comp. Beam 76′ Br. Sp. | $54,000<br>Plans $5 | 982,000 |
| DISTRICT No. 3, E. E. Towlson, Acting District Engineer, 333 E. Washington Street, Syracuse, New York | | | | | | |
| Cortland<br>(Rte. 11 & 13) | FAC 60–4 | City of Cortland: Arterial Highway<br>Tompkins and Port Watson Streets<br>Project U-481(7) | 2.35 | Asph. Conc. Type 2A Pavt.=2.32 Mi.<br>Misc. Work=0.03 Mi. | $68,000<br>Plans $5 | $1,231,000 |
| DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York | | | | | | |
| Monroe | M 60–3 | Court St. Dam<br>City of Rochester | .... | Clean. and Paint. Sector Gate No. 1 | $275<br>Plans $10 | 5,000 |
| Monroe<br>(Int. Tour. Rte. 490) | FIC 60–6<br>FAC 60–9 | Interstate Route Conn. 580<br>Rochester City-Eastern Expressway, Part 1<br>East City Line Interchange and City of Rochester: Outer Loop Arterial Highway (Highland Ave. to Int. Rte. 580)<br>Prolect I-1107 (11), U- 1093 (4) | 0.94 | 9″ Cem. Conc. Pavt., 2 @ 50′ Var. Wide=0.94 Mi. (Asph. Conc. Type 1A and Type 2A on Interchange) 4 Hwy. Seps. Comp., I-Beam, 4 Sp. 321.5′, 3 Sp. 143.5′; 4 Sp. 182′, 1 Sp. 62′; 2 R.R. Seps. Comp., I-Beam, 5 Sp. 381.6′, 3 Sp. 135′; 1 Hwy. Sep. Comp. Deck Gird., 2 Sp. 234.4′, 2 R.R. Seps. Thru Pl. Gird., 4 Sp. 352.7′; 1 Sp. 57′ | $270,000<br>Plans $10 | $4,876,000 |
| DISTRICT No. 6, J. H. Thomas, District Engineer, 30 West Main St., Hornell, N. Y | | | | | | |
| Steuben<br>(Rte. 248) | FARC 60–15 | Canisteo-Whitesville, Pt. 4, S.H. 8104<br>Canisteo-Whitesville, Pt. 5, S.H. 8204<br>Project F-367(6) | 2.45 | Asph. Conc. Pavt.=2.44 Mi., Misc. Work=0.01 Mi.; 3 Comp. Beam Brs., 2 Sp. 100′, 1 Sp. 63.3′, 1 Sp. 75.0′ | $42,000 | 753,000 |
| DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York | | | | | | |
| Clinton<br>(Int. Tour. Rte. 87) | FITS 60–1 | Interstate Route 502, Sect. 7D-2 Twin Bridge Road-Canadian Border<br>Project I-87-4(16) | 1.96<br>(4.50 Acc.) | Traffic Signs and Delineators | $1,800<br>Plans $5 | 33,000 |
| DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York | | | | | | |
| Rockland<br>(Rte. 303) | FARC 60–11 | New Jersey State Line-Congers Pt. 1, S.H. 1898<br>New Jersey State Line-Congers Pt. 2, S.H. 8448<br>Project U-528(8) | 1.19<br>(0.37 Acc.) | 9″ Cem. Conc. Pavt. 2 @ 24′ Wide=1.14 Mi., Misc. Work=0.05 Mi. (Acc.=0.22 Mi. Asph. Conc. Pavt. and 0.15 Mi. Cem. Conc. Pavt.) | $55,000<br>Plans $5 | 1,000,000 |
| Westchester | TSP 60–1 | Taconic State Parkway: Kitchawan Road Interchange, Northeast Ramp | 0.39 | 8″ Cem. Conc. Pavt.=0.33 Mi.<br>Misc. Work=0.06 Mi. | $7,000<br>Plans $5 | 130,000 |
| DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York | | | | | | |
| Broome<br>(Rte. 17C) | FARC 60–17 | Lestershire, S.H. 125 Hooper-Johnson City, S.H. 5699<br>Project U-401(9), U-1143(2) | 1.94<br>(1.96 Acc.) | Asph. Conc. Pavt.=2.33 Mi.<br>Grading and Drainage=1.57 Mi. | $190,000<br>Plans $5 | 3,476,000 |
| Delaware, Sullivan, New York & Wayne, Pa. | I, Br. 60–2 | Hancock; Lordville, N. Y.-Equimunk, Pa; Kellams Bridge, N. Y.-Stalker, Pa.; Cochecton, N. Y.-Damascus, Pa.; 4 Bridges | .... | Clean. and Paint. 5 Bridges, 2 Suspension and 2 Thru Trusses | $1,800<br>Plans $5 | 32,500 |
| DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York | | | | | | |
| Queens | FAHHE 60–1 | Horace Harding Expressway, Section 2 (Contract 7) (Oceania Street to Nassau County Line)<br>Project U-862(21) | 2.84 | Fencing, Guide Railing, Signs, Access Road, Misc. Work | $31,000<br>Plans $5 | 575,000 |

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN

SUPT. OF PUBLIC WORKS

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Bids: February 11, 1960

## Soil Explorations & Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the proviigons of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time on February 11, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CROTON RESERVOIR CROSSING OF THE TACONIC STATE PARKWAY, HC 4907, WESTCHESTER COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM 149.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. Kurt G. Rauer, District Engineer, New York State Department of Public Works, Pleasant Valley Road, Poughkeepsie, New York.

(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $18,615.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

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### U. S. Government

Sealed bids for the installation of central airconditioning at the U. S. Post Office, Grand Central Annex Station, 45th Street & Lexington Avenue, New York, N. Y., Project No. 00807, will be received until 2:00 P.M. E.S.T., February 23, 1960 and then publicly opened. Bidding material may be obtained from the Design and Construction Division, 12th floor west, 250 Hudson Street, New York 13, N. Y.

READ THE OFFICIAL
PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

Bids: February 18, 1960

## The Construction of South Approaches to Lewiston Power Plant

POWER AUTHORITY OF THE STATE OF NEW YORK
NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FROM DEVIL'S HOLE TO LEWISTON POWER PLAN TIN LEWISTON AND NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SPECIFICATIONS NO. PA-N-23088
NIAGARA CONTRACT N 26

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the South Approach Road and Lewiston Road from Devil's Hole to Lewiston Power Plant in Lewiston and Niagara Falls, Niagara County, New York, until 11:30 A.M., Eastern Standard Time on the 18th day of February, 1960, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:
Estimated:

| | | |
|---|---|---|
| 117,000 | cu. yds. | Excavation, unclassified |
| 87,000 | cu. yds. | Embankment |
| 29,000 | tons | Foundation course crushed rock |
| 35,900 | cu. yds. | Concrete—various kinds |
| 640,000 | pounds | Reinforcement bars, all kinds |
| 826,000 | pounds | Structural steel—various superstructures |
| 100,000 | lin. ft. | Concrete curbs |
| 2,140 | lin. ft. | Reinforced concrete culvert pipe 12" to 36" dia. |

The length of road to be constructed under this contract for the divided South Approach Road is approximately 0.55 miles, and for Lewiston Road (part of which has been constructed by others) is 0.65 miles.

The work shall be completed on or before September 1, 1961.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders, Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

PA-N-23038

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Bids: February 9, 1960

NOTICE
New Postponed Bid Date: February 9, 1960
Original Bid Date: January 14,* 1960

## Feeder Road Program

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
BIDS: JANUARY 14,* 1960
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that on January 14,* 1960, bids will be received for the construction of a major portion of the proposed Feeder Road Program of the country. The Specifications, Plans and Contract Documents will be for sale in El Salvador on December 9, 1959.

All Contractors interested in taking part in this bidding are requested to obtain the necessary Documents, Plans and Specifications from the Office of the Proveeder Especifico de Obras Publicas, Edificio Morazan, 8ª C. P., San Salvador, El Salvador, C. A. All requests must be accompanied by a certified check in the amount of One Hundred Sixty Dollars which will not be returned.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR,
C. A.

*New Postponed Bid Date: February 9, 1960

Bids: February 23, 1960

## Sluice Gate and Stop Shutters

CONTRACT 467

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time on Tuesday, February 23, 1960, for Contract 467, for furnishing, testing, and delivering one 6-foot by 15-foot broome type sluice gate, three 6-foot by 15-foot stop shutters, and one stop shutter lifter, together with their appurtenances, complete in every respect and ready for installation in the Intake Works of the West Delaware tunnel, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of twenty-five thousand dollars ($25,000.00), for the proper execution of the Contract.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the Contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

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Bids: February 19, 1960

## Marine Terminal-Construction of Substructure City of Pensacola and Pensacola Port Authority Pensacola, Florida

THE CITY OF PENSACOLA

Sealed proposals will be received by the City Manager, of the City of Pensacola, Florida, at his office in the City Hall, until 10:00 AM C.S.T., FEBRUARY 19, 1960 at which time they will be publicly opened and read.

Plans, specifications, and contract documents are open to public inspection at the office of the City Engineer, in Room 300, City Hall, Pensacola, Florida and the office of Fredrick R. Harris, Inc., 144 East 44th Street, New York 17, N. Y. or may be obtained upon deposit of fifty dollars ($50.00).

The full amount of deposit will be returned upon return in good condition of all documents within ten (10) days after the date of opening bids.

Bids must be accompanied by a certified check or bid bond in an amount not less than five percent (5%) of the bid.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty (60) days.

Award will be made to the lowest responsible bidder.

The owner reserves the right to reject all bids and to readvertise.

OLIVER J. SEMMES, JR.
CITY MANAGER

ATTEST:
CHAS. H. WALKER
CITY CLERK-COMPTROLLER

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## Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

For Throgs Neck Bridge Contract No. TN-10E, Bronx and Queens Approaches Viaduct Roadway Slabs. The bid must be accompanied by a deposit in the amount of $100,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $20.00, which will not be refunded.

Bids: February 24, 1960

## Narrows Bridge—Brooklyn Tower & Staten Island Tower

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Wednesday, February 24, 1960

For Narrows Bridge Contract No. NB-2B, Brooklyn Tower. The bid must be accompanied by a deposit in the amount of $250,000.

and

For Narrows Bridge Contract No. NB-2S, Staten Island Tower. The bid must be accompanied by a deposit in the amount of $250,000.

Bidders may submit bids for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $25.00, which will not be refunded.

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District of Columbia—Building Construction—Dept. of Bldgs. & Grounds, Jan. 13, 1960. CONSTRUCTION OF INCINERATOR NO. 4, FORT TOTTEN DRIVE AND HAWAII AVE. N.E., WASH., D. C. (INVITATION NO. C-60112-B). Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, Feb. 17, 1960, in Rm. 424, 499 Pa. Ave., N.W.

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Bids: February 23, 1960

## Upland Paving and Utilities

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDING NO. 145
CONTRACT PN-140.030

Sealed proposals for the construction of pavement and utilities for Building 145 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 23, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, February 4, 1960

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Bids: February 21, 1960

## Supply of Two Stone Crushers

IRAQI REPUBLIC
IRAQI PORTS ADMINISTRATION—BASRAH

Tenders are invited for the supply of two Stone Crushers complete.

Forms of Tender are obtainable from the Iraqi Republic Representatives or from Mudir, Purchasing and Tender, Iraqi Ports Administration—Basrah, during working hours, on payment of ID.1/—for each Tender (which will not be refunded).

The tender closes 13.00 hours on Sunday the 21st February, 1960.

A copy of the specifications are available at the Embassy of Iraq, 2135 Wyoming Ave. N.W., Washington, D. C. on payment of $2.80.

V.O.14.1.1960

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- INSTRUMENTATION
- PRESSURE VESSELS
- MATERIALS HANDLING

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*Send detailed resume and photo to*

G. VICTOR HOPKINS
**ARTHUR G. McKEE & CO.**
2300 Chester Ave. Cleveland 1, Ohio

## ARCHITECTURAL ENGINEER

Leading construction firm in Southeastern New England desires graduate architect or structural engineer with a minimum of 8 years experience.

Must have a thorough knowledge of industrial and commercial building design, drafting ability, and able to do quantity take-off.

Must be familiar with construction procedures as well as current developments in economic building practices.

Registration not necessary. Reply with resume, references, and salary requirements.

P-3555, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

DRAFTING ROOM

## STEEL CHECKER

Structural and Miscellaneous Steel Checker.
Minimum 5 Years Experience.
Opportunity for Advancement in Growing Concern for Right Man. Top Salary.
Rhode Island Area—Send Complete Resume to:

P. O. Box 1211 PROVIDENCE, R. I.

## Chief of Sewage Operations

City of Phila. Requires eng. degree & 9 years exp. in field of Water &/or Sewage Operations, including 6 yrs. in highly responsible admin. positions in sewage operations. Start $11,093 per yr., regular increases, liberal fringe benefits.

*Send resume to Miss A. Goldman,*
975 City Hall, Phila. 7, Pa.

## CIVIL ENGINEER

City of Brookfield, Wisconsin is expanding its engineering department and will employ a graduate civil engineer with some background in municipal or consulting engineering. Must be available for employment prior to March 15, 1960.
Submit resume of experience and qualifications to

CITY ENGINEER
2000 North Calhoun Road, Brookfield, Wis.

## CONSTRUCTION MANAGER

With heavy experience background in dams, tunnels and hydroelectric projects. Work domestic or foreign. Salary commensurate with experience. Write:

P-3097, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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## CIVIL ENGINEER

Permanent new position for graduate civil engineer in the salary range of $511 to $588 a month (plus longevity pay). Candidates with outstanding qualifications may be hired above the minimum. Vacation, sick leave, dual pension program, and other fringe benefits. Must be U.S. citizen and possess an EIT certificate. Some related experience desired to work in design and construction of sewer, water, street, sidewalks, and curbs. Travel expenses paid on invitation and moving expenses paid for selected candidate. Personnel Dept., 404 City-County Bldg., Madison 9, Wisconsin.

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### POSITIONS VACANT

**Sales Engineer: To represent expanding pre**stressed concrete plant in Southeastern Wisconsin area. Structural design background in building field considered helpful. Send complete resume and salary requirements to P-3492, Engineering News-Record.

**Civil Engineer—capable of supervising civil** engineering department in established consulting engineering firm. Experienced in water and sewerage facilities, municipal work and surveying. Must have sales and organizational ability to expand present department. Salary commensurate with ability. P-3495, Engineering News-Record.

**One Chief of Party—Must be capable of han**dling survey parties and have thorough understanding of municipal survey work pertaining to rights of way, curb and street line and grade, sanitary and storm sewer survey plans and profiles, and general survey work. Apply for appointment—Office of Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

**One Transit Man—For inside drafting room** and outside field work. Must have thorough knowledge of engineering, drafting and calculating, and be thoroughly familiar with deed and conveyance, and tax map work. Apply by appointment—Office of Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

**Two Jr. Engineering Aides or Chainmen—To** work in survey parties. Apply by appointment—Office of Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

**Plant Superintendent for Structural Steel,** Fabricating and Erection Company—20,000 ton capacity. To take complete charge of fabrication of structural steel for commercial, institutional and industrial buildings in Eastern States. Minimum requirements five years experience, supervising shop employing approximately 100 personnel. Send complete resume, listing all employment, experience, education and salary requirements. P-3447, Engineering News-Record.

**Engineer—Draftsman—Surveyor: With small** general contractor. Location, Ocean City, Maryland. Degree in engineering not required. Want man to assist in surveying, drafting, work on water and sewer plans, foundation layouts, assist in estimating, etc. under supervision of a registered professional engineer and surveyor. Salary 5 to 6 thousand. Submit resume' of experience and references to Geo. Bert. Cropper, Ocean City, Md.

**Water Superintendent. Applications being** accepted until February 15 for water superintendent to manage complete water works system. Includes 3 MGPD lime-soda ash treatment plant. Salary $6000. per annum. Age range 30-50. Send applications to I. L. Samuelson, City Engineer, Storm Lake, Iowa.

**General Superintendent—Sewer, Water, High**way and Subdivisions, Southwestern Ohio. Write giving full resume to: P-3545, Engineering News-Record.

**Highly qualified superintendents for major** road construction and bridge construction in the north-easterly section of the Country. Give experience specifically and character and work references. P-3532, Engineering News-Record.

## CIVIL ENGINEER

Need versatile Civil Engineer for an engineering company specializing in the design of Petroleum and Petro-Chemical plants with offices in N. Y. Must understand problems in topographical layout; sub-service range; separation and disposal of water supply and wastes involving impounding basins and spray ponds; river intake; piling; reinforced concrete foundations for heavy equipment; foundations for buildings; the design of structures for the support of vessels and Drums; specification and selection of building structures for compressor houses, control houses, and like plant facilities. Submit complete resume.

P-3578, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

### • POSITIONS VACANT

**Estimator—Expanding Philadelphia Contrac**tor has an opening for a man thoroughly experienced in competitive public bidding. Top pay and working conditions. Write for interview. P-3536, Engineering News-Record.

**Chief Estimator For Building Construction.** National organization seeking topnotch man to take-off, price, purchase and sub-contract. Must have had experience with larger competitive builders in New York, Connecticut and General Eastern area markets. Should have following of subcontractors and tradesmen. Free to travel as required. Only fully qualified persons need apply. All applications will be held in strict confidence. Send complete resume of experience, qualifications and salary requirements to P-3569, Engineering News-Record.

**Sanitary Engineer with at least two years'** experience in design and development of sewerage and waste treatment systems or sewage treatment equipment sales to prepare bids and proposals and to handle technical liaison. Send full details. Yeomans Brothers Company, 1999 N. Ruby Street, Melrose Park, Illinois, Fillmore 4-9600.

**Sales Engineer with experience on Crushing.** Sand and gravel, concrete plants and conveyor layouts. Truck mixer sales experience also desirable. In applying state full qualifications and experience. Good permanent position with old established equipment distributor in Eastern Territory. P-3598, Engineering News-Record.

**General Construction Manager — Graduate** Engineer, experienced estimator, office and field operations. Top man only, submit complete resume, salary requirements & when available. P-3589, Engineering News-Record.

**Hydraulic Engineer with broad experience in** river developments, particularly hydro power. Headquarters New York with travel abroad. Salary commensurate with experience. Write P-3591, Engineering News-Record.

**Wanted, Construction Superintendent, Esti**mating Experience Helpful. Building Primarily. Established Organization located in the Southeast, concentrating on Government, Public and State work. Must be fully qualified. Send full resume, past experience, educational background, and salary requirements to P-3597, Engineering News-Record. All replies will be treated confidentially.

**Estimator thoroughly familiar with con**crete & masonry. Location Florida. State age, experience, position held, company worked for, salary, reference, when available. Caldwell-Scott Engineering & Construction Co., P. O. Box 1221, Fort Lauderdale, Fla.

**Construction Supt. with extensive experience** in horizontal augering and boring methods, pipe jacking and well-pointing. Submit complete resume with salary requirements. P-3606, Engineering News-Record.

**Civil Engineer: Registered with capable back**ground and client connections, interested in association with party ready to form a consulting business in Maryland. P-3603, Engineering News-Record.

**Assistant Estimator, requiring experience in** industrial, commercial, institutional type construction. Salary commensurate with ability. Fringe benefits including medical, hospitalization benefits including medical, hospitalization benefits, group insurance, and retirement pension plan. Submit resume of experience. P-3601, Engineering News-Record.

(Continued on opposite page)

## • POSITIONS WANTED

**Executive-Construction Equipment — Over** thirty years experience in highway and heavy construction. Last 12 years head of equipment division of large heavy construction co. Have ability and experience to handle equipment specifications, purchasing, financing, accounting, management of large organization, and ability to cope with all maintenance problems regardless of the most difficult field conditions. PW-3451, Engineering News-Record.

**Chief Highway Engineer—Broad experience** in design and construction of expressways, parkways and municipal facilities. Registered P. E. in many States. Desires key position with engineering organization or contractor. Now located New England but will consider other locations in U. S. PW-3496, Engineering News-Record.

**C. E. Executive. 8 years heavy, marine, pipe**line, road, foreign construction and sales experience. Speak several languages. PW-3513, Engineering News-Record.

**Construction Manager, hvy. const. Desires** position with med. sized firm reasonably financed. Engr. background, age 41, exper. U. S. & O.S. all types contracts. Excellent contacts. Good following of personnel. Now employed. Available 90 days. PW-3437, Engineering News-Record.

**General Supt. 43, 20 years experience on** heavy industrial, commercial, chemical and institutional work. Engineering background. PW-3440, Engineering News-Record.

**Attention General Contractors: Chief Esti**mator and/or Project Manager available for immediate connection. Proven record of four to six million volumn per year in strict competition. Minimum, salary required $12,000.00 per year. Contact William C. Dick, 3507 Cardinal Blv'd., Daytona Beach, Florida. Phone—Clinton 3-9955.

**Soils Engineer—MCE, P. E. Age 28 experi**enced in testing, analysis, design and construction. Resume on request. PW-3568, Engineering News-Record.

**Project Manager, B.S.C.E., 16 yrs. exp., hvy.** Const., Hwys., flood control, earthwork, bldgs., Govt. contracts, field & office. E. Eiswirth, P. O. Box 48 Clayton 5, Mo.

**Heavy & highway grade Superintendent full** charge, engineering estimating experience. PW-3544, Engineering News-Record.

**Project-Manager 23 yrs. exp. heavy constr.** major U. S. & O. S. projects, bridges, waterfront, highways, earthwork, etc. Top references. PW-3529, Engineering News-Record.

**Construction Supt. General Construction.** Would like to permanently relocate in the far west, or south west. 8 years with present Gen. Contr. in the east. Experience mostly schools. Cost conscious, experience in quantity surveys, cost reporting, and field engineering. Running school job at present time, PW-3471, Engineering News-Record.

**Project Manager or General Supt. Excellent** record on Multi-Million Dollar projects. Airports, heavy and highway. All phases from letting through final estimate, sub-contracts, and negotiations with Corps of Engineers. Complete Supervisory following available. Prefer Western United States. Available for interview. PW-3527, Engineering News-Record.

**Construction Supt. General Construction.** PW-8896, Engineering News-Record.

**Estimator—Chief Engineer: With experience** in both field and office on all types of work, invites replies from progressive Heavy Construction Contractors. PW-3602, Engineering News-Record.

**Executive—Contract Manager, Attorney, Ad**ministrator, 15 yrs Legal—Construction Experience, Govt Contracts, Claims, Employed. PW-3599, Engineering News-Record.

**Civil Engr. Registered, 10 yrs. experience in** design and construction of highways, utilities and municipal improvements. Desires career position with advancement possibilities. PW-3592, Engineering News-Record.

**Geologist Engineering Minor—5 years experi**ence in Civil Engineering, age 28, family; desiring position with responsibility involving a phase of geology. Experienced in subdivision layouts, including water, sewer, and grading, bridge and highway design, soils investigations, surveying and drafting. PW-3580, Engineering News-Record.

## • POSITIONS WANTED

**Executive-Engineer: creative and adaptable** C.E. with 17 yrs. well rounded exp. in tech. administration, product development, sales & construction. Excellent in client relations. Seeks challenging administrative growth position. PW-3563, Engineering News-Record.

**Gen'l Sup't—Estimator—Exp. Airfield, state,** city paving projects, exc. base, concrete, asphalt. Will relocate, salary open. PW-3596, Engineering News-Record.

**General foreman blasting. PW-3585, Engi**neering News-Record.

**Superintendent of shaft & tunnel and general** rock work. PW-3586, Engineering News-Record.

**Sales Engineer—B.S.C.E.—27—3 yrs. exp.** with large highway and bridge contractor. PW-3571, Engineering News-Record

**Structural Engineer—Design and construc**tion. Strong theoretical background. 20 years broad experience: Skyscrapers, commercial, industrial, institutional and residential buildings; power, communications, hydraulic and mechanical structures; bridges. Reg. N.Y., Pa., Ill. Desires permanent supervisory position Middle Atlantic States. PW-3562, Engineering News-Record.

## • POSITIONS WANTED

**Electrical Construction Superintendent ex**perienced in steam & hydro power stations, industrial plants, substations, transmission lines & distribution systems. PW-3556, Engineering News-Record.

**Sales Engineer, mature-executive type ap**pearance, 25 years in fabricated metal products and allied lines. Top Echelon contacts with leading architects & general contractors. Capable arrangement facilities for shop drawings—details — erection — job supervision. PW-3588, Engineering News-Record.

**B.S.C.E., 26, single, ambitious, 1 yr. experi**ence water supply and treatment, 1 yr. experience structural steel design and testing. Desire overseas position. PW-3595, Engineering News-Record.

**14 years Federal—Municipal civil service 20** years private industry engineering, construction management. Experience on global scale and wide range of projects. Age 57. Dossier available. Returning US May. Prefer non-urban area or foreign. PW-3593, Engineering News-Record.

**CE PE Age 31 seeks responsible position with** municipality on east coast. 7 years experience in municipal eng., admin. and related fields. PW-3604, Engineering News-Record.

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**Assets: Machinery, equipment, small tools. All in good condition. Owners guarantee of liability. Now actively operating in Florida in sewer and water lines.**

**Cash requirements for purchase of stock and sales price, $40,000.00, and must assume approximately $80,000.00 current liabilities and $80,000.00 in notes payable to bank, or approximately $200,000.00. Approximately $250,000.00 in assets involved.**

**This is an excellent purchase for company reasonably assured of profitable 1960 business and wanting to set up operations in rapidly growing South Florida.**

**Respondents please submit brief outline of business and financial status after which additional information will be furnished.**

BO-3505, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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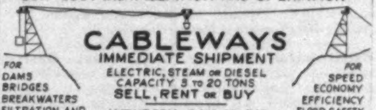

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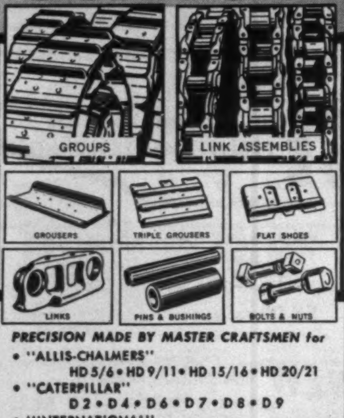

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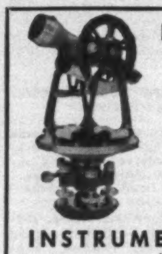

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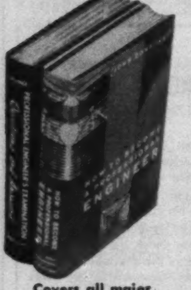

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## Upgrading County Bridges

In the current discussion over the degree to which governmental units should use consulting engineers to supplement their own engineering departments, the county government situation with respect to highway bridges should not be overlooked. No more than a handful of the 3,068 counties in the U.S. have or can afford to have a staff engineer. But believing, also, that they cannot afford to hire consulting engineers, many counties try to get their bridge engineering "free" from construction materials companies or contractors.

Such engineering is never free, and it runs the chance of being inadequate. County bridges produced under this system are probably safe enough, but it is questionable whether they are always the best and most economical structures that could be built at a particular location. This is the crux of the county bridge building question, and it points to the area in which county highway bridges could stand upgrading to the benefit of the taxpayer.

A case in point occurred last year in Tennessee where counties have followed the practice of hiring a contractor to build a bridge copied from the state highway department's book of standards. That state's Maury County, however, decided to hire a consultant to design one of its bridges. He prepared, for competitive bidding, three alternate designs, any one of which would have been suitable. The county thus got an adequate bridge suited to a particular site; by awarding the contract to the low bidder, it also got the most economical one.

The Nashville Section of the American Society of Civil Engineers has used this example in a campaign to get other Tennessee counties to upgrade their bridges by engaging consulting engineers and awarding the construction contract on competitive bids. It is a campaign that deserves to succeed, and be emulated elsewhere.

## Room for Improvement

Thermal strains have been the nemesis of many a structure in the past, and occasionally of some recent ones, too. When adequate provision is made in design for the effect of temperature change, however, it need be of no more concern than dead- or live-load effects. But what is adequate provision?

Safety is, of course, a prime consideration, but good engineering also calls for provisions that preclude structural damage at a minimum of cost and that also are no more harmful than the damage they seek to prevent. While many techniques in use today keep thermal strains under control, they do so at the expense of "overdesign" and sometimes they do more harm than good. In some cases, it may be found to be safer and less expensive to ignore thermal effects or to design a structure to resist the strains than to make provisions for free movement.

In the building field, there is occasional evidence of the costly result of overlooking temperature effects. There are roofs that expand and push out exterior walls. There are facades that crack because they are prevented from moving, and yet were not designed to resist thermal strains. More attention to thermal effects could eliminate these difficulties.

In concrete highway slabs, transverse expansion joints are required at frequent intervals by many states, while others have many miles of highway without such joints. Which design is best is plainly an unresolved question, but the possibilities of reduced maintenance and better riding qualities with a jointless pavement argue in favor of further study and trial.

A study of thermal strains in bridges also would prove profitable. In some foreign countries, for example, bridges are designed for non-uniform temperature distribution, which is associated with smaller movements than those resulting from an assumption of constant temperature. Hence, less elaborate provision need be made for expansion and contraction.

Furthermore, in some countries, continuous girder spans twice the length of any in the U.S. have been built without suspended spans and interior expansion joints, and have been in service for many years without trouble. This is in sharp contrast with designs that use suspended spans to break continuity and include elaborate provision for expansion and contraction at the ends of those spans.

Undoubtedly more test data are needed to shed additional light on thermal behavior of structures so that they need not be under or overdesigned for temperature effects. But there also appears to be evidence that all engineers are not yet putting to use all the information now available.

## Too Bad, but Logical

It is disappointing that the West won't share whatever advantages there may be in constructing Aswan High Dam, but once the Russians had the first-stage work, it was almost inevitable that they get the second stage (ENR Jan. 28, p. 47). It was also logical, since rock being excavated now for the diversion channel, in the first phase, can be used in the main dam, which is part of the second phase.

There is a lesson here that could be applied to big dam projects in this country, which are often contracted piecemeal only because they are dependent on annual appropriations from Congress. When a job divides into logical construction phases, wholly independent of one another, such piecemeal contracting may be justified. But there is little merit in the practice when the construction phasing is done only for financial reasons.

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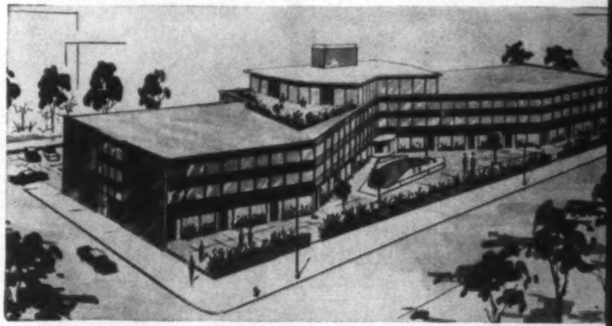

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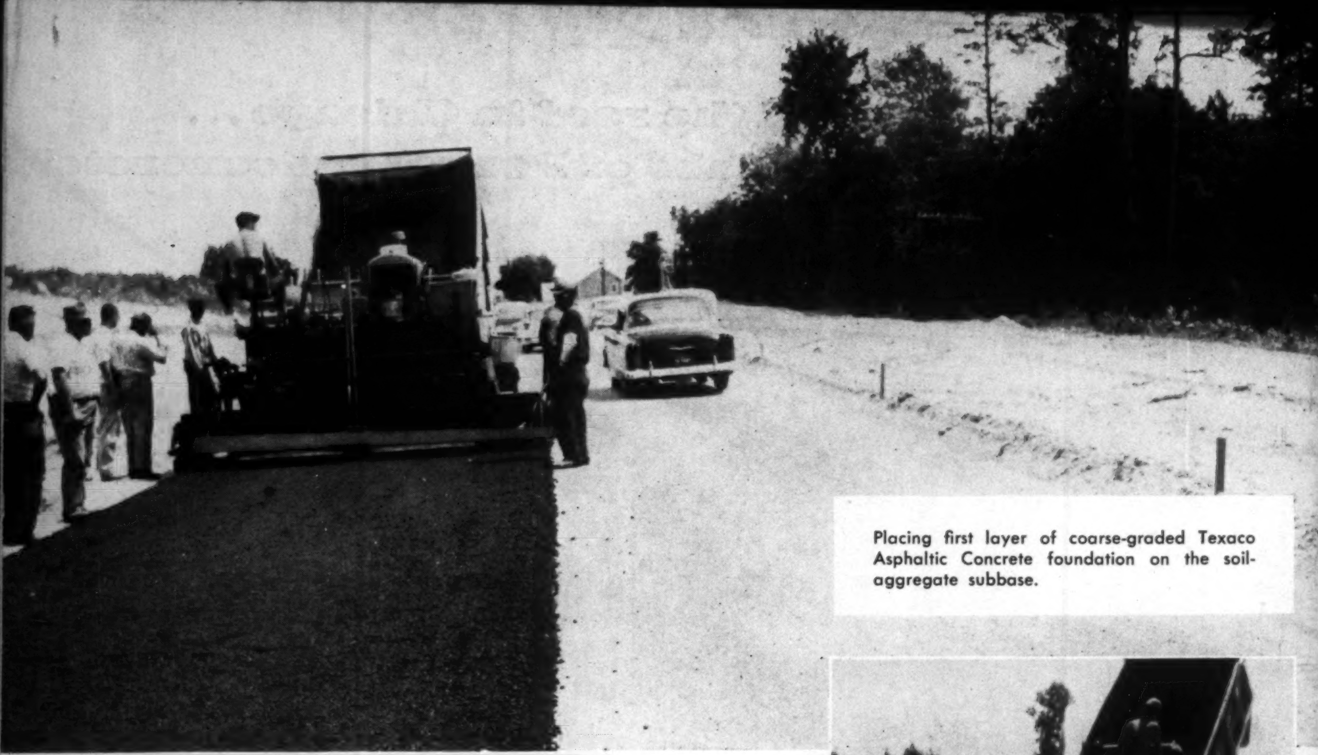

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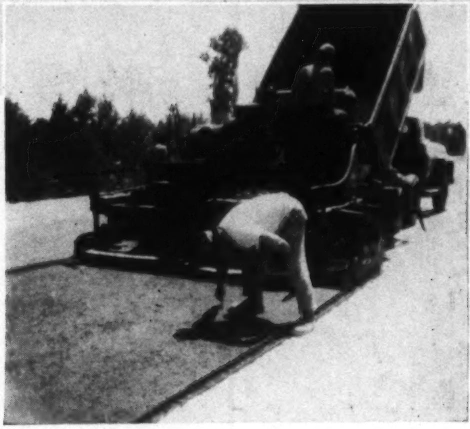

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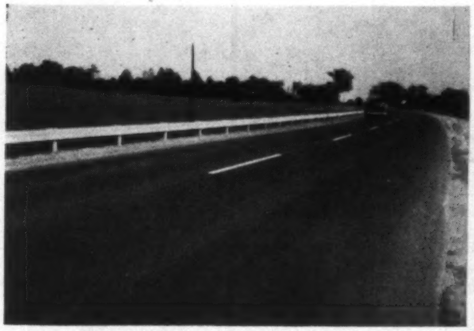

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